

**DRAFT
Environmental Impact
Statement/Environmental
Impact Report**

**San Luis
Transmission
Project**

**DOE/EIS-0496
SCH#2013112059**



**Western Area Power Administration
San Luis & Delta-Mendota Water Authority**

July 2015

Cover Sheet

Type of Statement:	Draft Environmental Impact Statement/ Environmental Impact Report for the San Luis Transmission Project		
Lead Federal Agency:	Western Area Power Administration		
Lead State Agency:	San Luis & Delta Mendota Water Authority		
Cooperating Agency:	U.S. Bureau of Reclamation		
Location:	Alameda, San Joaquin, Stanislaus, and Merced Counties, California		
EIS Number:	DOE/EIS-0496		
California State Clearinghouse Number:	2013112059		
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Abstract: Western Area Power Administration (Western) and the San Luis & Delta-Mendota Water Authority (Authority) prepared an Environmental Impact Statement (EIS)/Environmental Impact Report (EIR) for the proposed San Luis Transmission Project (SLTP) in compliance with the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA).

The Bureau of Reclamation (Reclamation) entered into a contract with Pacific Gas & Electric Company (PG&E) in 1965 for power transmission service between Western's Tracy Substation and Reclamation's San Luis Unit (SLU) facilities. The existing transmission contract with PG&E expires in March 2016, and PG&E has stated that it will not be renewed. Without the contract or a federal transmission line to serve the primary SLU facilities, the federal government will have to take transmission service under the California Independent System Operator Tariff, which would substantially increase Reclamation's transmission costs, which are paid by its water service contractors, including the Authority. Reclamation submitted a transmission service request to Western to consider various transmission service arrangements, including the construction of new federal transmission lines for Reclamation's continued delivery of federal water after the PG&E contract expires. In October 2013, an eligible Western transmission customer submitted a transmission service request to Western for transmission service within the same corridor as requested by Reclamation. Western is evaluating both requests jointly in order to determine if it can satisfy Reclamation's need and the eligible customer's request with a single project.

Therefore, Western proposes to construct, operate, and maintain the San Luis Transmission Project, which comprises 95 miles of new transmission lines within easements ranging from 125 to 250 feet wide along the foothills of the Diablo Range in the western San Joaquin Valley, California. Additional components of the SLTP would include two new 500-kV substations, substation improvements, communication facilities, improvements to existing access roads, new permanent access roads, and temporary access roads to facilitate construction activities.

Comments on this Draft EIS/EIR should be mailed, faxed, or emailed to Mr. Donald Lash, Western's NEPA Document Manager, at the address above by August 31, 2015.

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List of Acronyms

ACE	Altamont Corridor Express
ACHP	Advisory Council on Historic Preservation
AM	Amplitude modulation
ASC	Agricultural Services Center
ASR	Alternatives Screening Report
BAAQMD	Bay Area Air Quality Management District
BGEPA	Bald and Golden Eagle Protection Act
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CAISO	California Independent System Operator
CAS	Corrective Action Study
CDFW	California Department of Fish and Wildlife
CDPR	California Department of Parks and Recreation
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CNDDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CO	Carbon monoxide
CORP	California Outdoor Recreation Plan
CRPR	California Rare Plant Rank
CVP	Central Valley Project
CVRWQCB	Central Valley Regional Water Quality Control Board
CWA	Clean Water Act
DOC	California Department of Conservation
DOE	Department of Energy
DOT	Department of Transportation
DPM	Diesel particulate matter
DTSC	Department of Toxic Substances Control
ECAP	East County Area Plan
ECSP	East County Specific Plan
EDD	Employment Development Department
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EMF	Electromagnetic Field
EPA	Environmental Protection Agency
EPM	Environmental Protection Measure
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
FM	Frequency modulation

FMMP	Farmland Mapping and Monitoring Program
FP	Foothill Pasture
FPPA	Farmland Protection Policy Act
GA	General aviation
GHG	Greenhouse gas
HAP	Hazardous Air Pollutant
HCP	Habitat Conservation Plan
HR	Hydrologic Region
HWCL	Hazardous Waste Control Law
IEEE	Institute of Electrical and Electronics Engineers
KOP	Key Observation Point
LOS	Level of Service
LPA	Large Parcel Agriculture
MBTA	Migratory Bird Treaty Act
MLD	Most Likely Descendant
MMRP	Mitigation Monitoring and Reporting Program
MOA	Memorandum of Agreement
MW	Megawatt
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NASA	National Aeronautics and Space Administration
NASS	National Agricultural Statistics Service
NEPA	National Environmental Policy Act
NHD	National Hydrography Dataset
NHPA	National Historic Preservation Act
NIFP	National Flood Insurance Program
NMFS	National Marine Fisheries Service
NPPA	Native Plant Protection Act
NRCS	Natural Resources Conservation Service
OATT	Open Access Transmission Tariff
OHP	Office of Historic Preservation
OHV	Off-highway vehicle
OS	Open Space
OSHA	Occupational Safety and Health Administration
PA	Programmatic Agreement
PAID	Planned Agricultural Industrial Development
PFYC	Potential Fossil Yield Classification
PM2.5	Fine particulate matter (less than 2.5 microns in diameter)
PM10	Particulate matter (less than 10 microns in diameter)
PPV	Peak particle velocity
PRC	Public Resources Code
PRPA	Paleontological Resources Preservation Act
PSMM	Power System Maintenance Manual

PSOM	Power Systems Operations Manual
PSSM	Power System Safety Manual
PV	Photovoltaic
RCRA	Resource Conservation and Recovery Act
ROD	Record of Decision
ROW	Right-of-way
RPO	Regional Preservation Official
RTP	Regional Transportation Plan
RWQCB	Regional Water Quality Control Board
SCADA	Supervisory Control and Data Acquisition
SDWA	Safe Drinking Water Act
SHPO	State Historical Preservation Officer
SIP	State Implementation Plan
SJMSCP	San Joaquin County Multi--Species Conservation and Open Space Plan
SJVAB	San Joaquin Valley Air Basin
SJVAPCD	San Joaquin Valley Air Pollution Control District
SLTP	San Luis Transmission Project
SLU	San Luis Unit
SMARA	Surface Mining and Reclamation Act of 1975
SNR	Sierra Nevada Region
SR	State Route
SRA	State Recreation Area
SSC	Species of Special Concern
ST	Swainson's hawk
SVP	Society of Vertebrate Professionals
SWP	State Water Project
SWRCB	State Water Resources Control Board
TAC	Transmission Access Charge
TCP	Traditional Cultural Property
TDS	Total dissolved solids
TLV	Threshold Limit Value
TMDL	Total maximum daily load
UCMP	University of California Museum of Paleontology
UPRR	Union Pacific Railroad
UR	Urban Reserve
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UTM	Universal Transverse Mercator
VOC	Volatile organic compound

Executive Summary

ES.1 Introduction

The Western Area Power Administration (Western), a power marketing administration within the U.S. Department of Energy (DOE), and the San Luis & Delta-Mendota Water Authority (Authority), a California joint powers agency, have prepared this Environmental Impact Statement (EIS)/Environmental Impact Report (EIR) for the San Luis Transmission Project (SLTP or Proposed Project). In conformance with the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA), this EIS/EIR is intended to inform decision makers, other agencies, and the public regarding the environmental and public safety effects that could result from construction, operation, maintenance, and decommissioning of the SLTP. Western is the federal lead agency under NEPA, and the Authority is the state lead agency under CEQA. The Bureau of Reclamation (Reclamation) is a Cooperating Agency.

ES.2 Overview of the Proposed Project

The SLTP would consist of:

- a new 500-kilovolt (kV) transmission line about 65 miles in length between the new Tracy East and Los Banos West Substations;
- a new 230-kV transmission line about 3 miles in length between the new Los Banos West Substation and Western's existing San Luis Substation;
- a new 230-kV transmission line about 20 miles in length between Western's existing San Luis Substation and Western's existing Dos Amigos Substation or a new 230-kV transmission line about 18 miles in length between the new Los Banos West Substation and Western's existing Dos Amigos Substation;
- an interconnection with the existing Western 500-kV Los Banos-Gates No. 3 transmission line just south of Pacific Gas & Electric's (PG&E) existing Los Banos Substation into the new Los Banos West Substation; and
- a new 70-kV transmission line about 7 miles in length between the existing San Luis and O'Neill Substations.

Western would construct, own, maintain and operate the lines, which would be located mostly adjacent to existing transmission lines in Alameda, San Joaquin, Stanislaus, and Merced Counties in California.

Additional components of the SLTP would include new 230-kV line terminal bays at Western's San Luis and Dos Amigos Substations, as well as a new 230/70-kV transformer bank and interconnection facilities at the San Luis Substation.

The SLTP would also include ancillary facilities, such as communication facilities, improvements to existing access roads, new permanent access roads, and temporary access roads to facilitate construction activities. Western would acquire the necessary easements and fee land for the Proposed Project.

ES.3 Purpose and Need and Project Objectives

Federal Purpose and Need

Reclamation entered into a contract with PG&E in 1965 for power transmission service between Western's Tracy Substation and Reclamation's San Luis Unit (SLU) facilities near Santa Nella, California and Los Banos, California including the Gianelli Pump-Generating Plant, Dos Amigos Pumping Plant and the

O'Neill Pump-Generating Plant for delivery of Central Valley Project (CVP) water supply to its federal water service contractors. The SLU is part of the CVP and is owned by the United States. These SLU facilities pump up to 1.25 million acre-feet of water out of the California Aqueduct and the Delta-Mendota Canal into the San Luis Reservoir for later use, including irrigation supply to about 600,000 acres of farmlands located in western Fresno, Kings, and Merced Counties.

As part of the original PG&E contract, the federal government paid PG&E \$2.6 million to provide 50 years of 230-kV transmission service to deliver federal power to Reclamation's Gianelli and Dos Amigos facilities. The existing transmission contract with PG&E expires on March 31, 2016, and PG&E has stated it will not renew the existing contract. Without the contract or a federal transmission line to serve the primary SLU facilities, the federal government will have to take transmission service under the California Independent System Operator (CAISO) Tariff between Tracy Substation and the SLU facilities using the same PG&E transmission and distribution lines that have served the SLU for 50 years. Under the CAISO Tariff, the estimated cost increase to Reclamation the first year is expected to be \$8 million. Reclamation's operating costs are paid by its water service contractors.

In anticipation of PG&E's contract expiring and the substantial increase in transmission costs associated with scheduling federal power to these facilities under the CAISO Tariff, Reclamation submitted a transmission service request to Western to consider various transmission service arrangements, including the construction of new federal transmission lines for Reclamation's continued delivery of federal water after the PG&E contract expires. Western responded to Reclamation's request for transmission service consistent with Western's Open Access Transmission Tariff (OATT) and existing laws. Reclamation, on behalf of its water contractors, is evaluating options to pump, store, convey, and deliver federal water via the SLU at reasonable cost. The increase in costs incurred by Reclamation under the CAISO Tariff are so great that reasonable prudence requires the agencies to pursue and evaluate the proposed SLTP.

In October 2013, an eligible Western transmission customer¹ submitted a transmission service request in accordance with Western's OATT for transmission service within the same corridor as requested by Reclamation. Western is evaluating both requests jointly in order to determine if it can satisfy Reclamation's need and the eligible customer's request with a single project. This Project would require at least a single-circuit 500-kV transmission line between the Tracy and Los Banos areas. This EIS/EIR evaluates a 500-kV transmission line with an option to construct at 230-kV should the eligible transmission customer decide to not participate. It is anticipated that the eligible Western transmission customer will decide whether to participate by spring 2016.

Project Objectives

The Project objectives for the SLTP are to:

- Obtain durable, long-term, cost certain and efficient transmission delivery of CVP power from federal power generation sites to the major pumping stations of the SLU to reliably deliver water to Reclamation and the Authority's member agencies (federal water service contractors);
- Locate and install transmission facilities in a safe, efficient, and cost effective manner that meets project needs while minimizing environmental impacts;

¹ Pending its decision to participate in the Project, the identity of this customer is confidential. Details on the interconnection request are available at: <http://www.oasis.oati.com/wasn/index.html> (see Transmission Queue page for updates)

- Locate facilities to minimize the potential of environmental impacts resulting from damage by external sources;
- Maximize the use of existing transmission corridors and rights-of-way in order to minimize effects on previously undisturbed land and resources; and
- Obtain stable and reliable transmission that meets project needs in a cost-effective and timely manner.

ES.4 Summary of Public Involvement Activities

Public Notification and Scoping Process

Western and the Authority held public open-house meetings to answer questions and receive comments on the scope of the environmental analysis for the SLTP. These meetings were held on January 8, 2014, in Tracy, California, and on January 9, 2014, in Santa Nella, California. The 60-day public scoping comment period began on November 22, 2013, when the Notice of Intent was published in the *Federal Register* and the Notice of Preparation was filed with the California State Clearinghouse. The 60-day public scoping comment period ended on January 21, 2014.

Western distributed notices to 75 local agencies, 8 state agencies, 6 federal agencies, 21 organizations, and 39 elected officials. Western also sent postcards announcing the public scoping meetings and comment period to all property owners within or adjacent to the Proposed Project or alternative routes, and published advertisements on the meetings and comment period in five local newspapers. The postcards and advertisements also provided an overview map of the Project area, a brief summary of the SLTP, how to provide scoping comments, and where to find additional information on the Proposed Project. Nine agencies, four organizations, and eight individuals submitted scoping comments.

Additionally, two newsletters have been distributed to affected and interested landowners, organizations and agencies. The first newsletter, distributed May 2014, announced the availability of the Scoping Report and the Alternatives Screening Report on the SLTP website.² The second newsletter, distributed February 2015, announced that a new alternative corridor (the Billy Wright Road Alternative) and two new proposed substations (the Tracy East and Los Banos West Substations) would be evaluated in the Draft EIS/EIR. It also announced the availability of an updated Alternatives Screening Report on the SLTP website.

Agency Coordination and Native American Consultation

Western and the Authority have had several meetings with various agencies to discuss the proposed SLTP and consider their comments and concerns. The agencies include the U.S. Fish and Wildlife Service, California Department of Fish and Wildlife, and the California Department of Parks and Recreation.

In a March 3, 2014 letter, Western contacted all Native American groups on the list provided by Native American Heritage Commission (NAHC). Western received a response from the California Valley Miwok Tribe. Western will continue to keep all of the Tribal contacts informed of any changes to the SLTP and will continue to be responsive to any future requests for consultation. The SLTP does not cross tribal reservations or Native American Trust territories.

² <http://www.sltpeis-eir.com/>

Areas of Controversy / Public Scoping Issues

Issues raised during the public scoping process are described in detail in the Scoping Report (available on the SLTP website), and are summarized below.

- **Air Quality.** Recommendations for air quality-related discussions to be included in the Draft EIS/EIR.
- **Coordination with Local Agencies.** Requests for appropriate coordination and consultation with affected local agencies.
- **Land Use Conflicts.** Concern regarding the potential for the proposed route to conflict with existing and proposed land uses (e.g., solar projects, residential developments, PG&E transmission lines and pipelines, and the Crow's Landing Airport).
- **Adequacy of Project Notices.** Concern regarding the adequacy and clarity of the Project Description presented in the Notice of Intent and Notice of Preparation.
- **Special-Status Species.** Concern regarding the potential effects of the Proposed Project on special-status species and supporting habitat.
- **Permitting.** Suggestions for permits that may be required for approval and implementation of the Proposed Project.
- **Alternative Routes.** Suggestions for alternative routes to minimize significant impacts including increasing the distance of the proposed route from adjacent residences and the avoidance of land parcels identified for proposed land use projects.
- **Property values.** Concern regarding a decrease of property value attributable to the presence of transmission lines.
- **Electromagnetic Fields (EMF).** Concern regarding the potential for health risks associated with EMF emitted from transmission lines.
- **Public Scoping Process.** Concern regarding the timeframe provided for public comment and the adequacy of information provided to the public.

ES.5 Impacts of the Proposed Project

The Proposed Project would result in significant and unavoidable impacts (and contribute to cumulatively considerable impacts) to the following resource areas. Refer to Section ES.8 for a summary of all impacts of the Proposed Project.

- **Noise.** Construction would result in more than a 5 decibel increase intermittently at sensitive receptors near the Project, which would exceed local noise standards near residences throughout the Project area.
- **Recreation.** Construction of the proposed Los Banos West Substation would result in conflicts with, physical alterations of, and decreased accessibility to the Jasper Sears off-highway vehicle (OHV) Use Area in the San Luis segment.
- **Land Use.** Construction of the proposed Los Banos West Substation would result in conflicts with the San Luis Reservoir State Recreation Area Resource Management Plan/General Plan as it pertains to the Jasper Sears OHV Use Area and conflicts with this established special use area in the San Luis segment.

ES.6 Alternatives to the Proposed Project

The determination of whether to retain an alternative for analysis in the EIS/EIR was based, in part, on the following NEPA/CEQA criteria: (a) meeting the purpose and need and most project objectives, (b) reducing significant effects of the Proposed Project, and (c) being potentially feasible in terms of possible legal, regulatory, or technical constraints.

Alternatives Retained for Analysis in the EIS/EIR

The EIS/EIR considers seven alternatives to the Proposed Project, including the No Action/No Project Alternative, as listed below. To facilitate a fair or equal comparison between the impacts of the alternatives and the Proposed Project, the Project area was divided at common points of the corridors into four segments (North, Central, San Luis, South).

North Segment

There are no alternative corridors in the North Segment.

Central Segment

- Patterson Pass Road Alternative

San Luis Segment – 500-kV

- Butts Road Alternative
- West of Cemetery Alternative

San Luis Segment – 70-kV

- West of O'Neill Forebay 70-kV Alternative

South Segment

- San Luis to Dos Amigos Alternative
- Billy Wright Road Alternative

Alternatives Considered and Eliminated

An additional seven alternatives were considered in a screening process and eliminated from further review, as documented in the Alternatives Screening Report (available on the SLTP website).

ES.7 Summary of Draft EIS/EIR Conclusions: Environmentally Preferred Alternative

The Authority has identified the Environmentally Superior Alternative, as required by CEQA Guidelines 15126.6(e)2. In this EIS/EIR, it is called the Environmentally Preferred Alternative. The following section summarizes the results of the alternatives comparison for each Project segment and identifies the Environmentally Preferred Alternative. Western's Agency Preferred Alternative will be identified in the Final EIS/EIR following analysis of public comments on the Draft EIS/EIR and further internal review of the Draft EIS/EIR.

North Segment

The Proposed Project is the environmentally preferred corridor in this segment as there are no alternatives.

Central Segment

The Patterson Pass Road Alternative is the environmentally preferred corridor in this segment because it is 1,000 feet farther from residences than the Proposed Project. Therefore, it would have fewer noise and visual resources impacts. Agriculture impacts would also be slightly less than the Proposed Project in the Central Segment.

San Luis Segment – 500-kV

The Proposed Project is the environmentally preferred corridor in this segment because it is the shortest route with the least ground disturbance. Therefore, it would result in fewer impacts to air quality, geology, paleontological resources and water resources. The Proposed Project is furthest from the San Joaquin Valley National Cemetery and would avoid construction noise and visual impacts to this sensitive resource. Additionally, it would impact the least amount of habitat for the federally and state endangered and state fully protected blunt-nosed leopard lizard.

San Luis Segment 70-kV

In the San Luis Segment (70-kV), the Proposed Project is the environmentally preferred corridor. The Proposed Project and West of O'Neill Forebay 70-kV Alternative are the same length, have the same length of new access roads, and have the same number of support structures. Therefore, impacts are similar and there is no preference between corridors for most issue areas. However, the Proposed Project would result in fewer impacts to habitat for federally and state-listed species including San Joaquin kit fox, California tiger salamander, and blunt-nosed leopard lizard. Additionally, the Proposed Project would be further from the San Joaquin Valley National Cemetery, thereby resulting in fewer land use, noise, and visual resources impacts than the West of O'Neill Forebay 70-kV Alternative.

South Segment

In the South Segment, the San Luis to Dos Amigos Alternative is the environmentally preferred corridor. The Proposed Project and the San Luis to Dos Amigos Alternative are adjacent, are the same length, have the same length of new access roads, and have the same number of support structures. Therefore, impacts are similar and there is no preference between corridors for most issue areas. However, the San Luis to Dos Amigos Alternative would have slightly fewer impacts to agricultural land. It would also be further from more residences than the Proposed Project, thereby resulting in less construction noise impacts.

In summary, the Environmentally Preferred Corridor Alternative is composed of:

- North Segment – Proposed Project
- Central Segment – Patterson Pass Road Alternative
- San Luis Segment (500-kV) – Proposed Project
- San Luis Segment (70-kV) – Proposed Project
- South Segment – San Luis to Dos Amigos Alternative

No Action/No Project Alternative

Under the No Action/No Project Alternative, construction of the San Luis Transmission Project would not occur. Western would arrange for transmission service for the SLU from the CAISO using existing electric infrastructure. As there would be no adverse direct, indirect, or cumulative environmental impacts under this alternative, it would be preferable to the Environmentally Preferred Corridor Alternative. However, Reclamation's estimated transmission costs under the No Action/No Project Alternative (i.e., the CAISO Tariff) would increase by more than \$8 million per year. Reclamation's estimated transmission costs under the No Action/No Project Alternative (i.e., the CAISO Tariff) would be so expensive as to render this alternative infeasible. Further, the No Action/No Project Alternative is considered infeasible because it would not achieve the purpose and need or basic project objectives.

ES.8 Impact Summary Tables

Levels of significance in this EIS/EIR are defined by classification as follows:

- Significant; cannot be mitigated to a level that is less than significant
- Significant; can be mitigated to a level that is less than significant
- Less than significant; no mitigation required

Under NEPA, beneficial impacts of a proposed action are also relevant considerations in the environmental analysis.

The tables on the following pages summarize all significant impacts of the Proposed Project. In addition, there are several impacts that were determined to be less than significant and would not require mitigation.

Table ES-1. Significant and Unmitigable Impacts of the Proposed Project

Impact	Mitigation Measures (if any)
Impact NOISE-1 – Result in a substantial temporary or periodic increase in ambient noise levels (above 5 dBA Leq) at sensitive receptor locations above levels existing without the Project	NOISE-1 – Provide construction notification. NOISE-2 – Implement Best Management Practices for construction noise.
Impact NOISE-3 – Result in noise levels that exceed local or federal noise regulations or guidelines	NOISE-1 – Provide construction notification. NOISE-2 – Implement Best Management Practices for construction noise.
Impact REC-1 – Conflict with established, designated, or planned recreation areas or activities	NOISE-1 – Provide construction notification. NOISE-2 – Implement Best Management Practices for construction noise. AQ-1 – Reduce or offset construction equipment emissions. REC-1 – Coordinate with local agencies to identify tower locations. REC-2 – Modify existing facilities within and relocate, if necessary, the entrance to the Jasper Sears OHV Use Area.
Impact REC-2 – Result in changes that alter or otherwise physically affect established, designated, or planned recreation areas or activities	REC-2 – Modify existing facilities within and relocate, if necessary, the entrance to the Jasper Sears OHV Use Area.
Impact REC-3 – Decrease accessibility to areas established, designated, or planned for recreation	REC-2 – Modify existing facilities within and relocate, if necessary, the entrance to the Jasper Sears OHV Use Area.

Table ES-2. Significant but Mitigable Impacts of the Proposed Project

Impact	Mitigation Measures
Impact AQ-1 – Violate ambient federal and/or state air quality or emissions standards applicable to the study area, or increase the frequency of severity of any existing violation of state and/or federal ambient air quality standard	AQ-1 – Reduce or offset construction equipment emissions.
Impact AQ-2 – Expose sensitive receptors to detrimental pollution concentrations	AQ-1 – Reduce or offset construction equipment emissions.
Impact AQ-3 – Contribute to a collective or combined air quality effect, including existing and foreseeable other projects that leads to violation of air quality standards, even if the individual effect of the project/activity is relatively minor compared with other sources	AQ-1 – Reduce or offset construction equipment emissions.
Impact AQ-6 – Emissions exceed conformity de minimis thresholds set by the applicable Air District	AQ-1 – Reduce or offset construction equipment emissions.
Impact BIO-1 – Adversely affect a listed endangered, threatened or proposed species or designated critical habitat, or a non-listed special-status plant or animal species either directly or through habitat loss or modification	<p>BIO-1 – Conduct surveys for special-status plants and sensitive habitats.</p> <p>BIO-2 – Avoidance and minimization measures for special-status plants and vegetation communities.</p> <p>BIO-3 – Provide compensatory mitigation for impacts to special-status plants.</p> <p>BIO-4 – Provide compensatory mitigation for impacts to federally listed branchiopod habitat.</p> <p>BIO-5 – Avoidance and minimization measures for valley elderberry longhorn beetle.</p> <p>BIO-6 – Provide compensatory mitigation for impacts to elderberry plants.</p> <p>BIO-7 – Avoidance and minimization measures for Alameda whipsnake.</p> <p>BIO-8 – Avoidance and minimization measures for blunt-nosed leopard lizard.</p> <p>BIO-9 – Avoidance and minimization measures for special-status reptiles.</p> <p>BIO-10 – Avoidance and minimization measures for giant garter snake.</p> <p>BIO-11 – Avoidance and minimization measures for western pond turtle.</p> <p>BIO-12 – Provide compensatory mitigation for impacts to special-status reptiles.</p> <p>BIO-13 – Avoidance and minimization measures for California red-legged frog.</p> <p>BIO-14 – Avoidance and minimization measures for California tiger salamander and western spadefoot.</p>
Impact BIO-1 – Adversely affect a listed endangered, threatened or proposed species or designated critical habitat, or a non-listed special-status plant or animal species either directly or through habitat loss or modification (continued)	<p>BIO-15 – Provide compensatory mitigation for impacts to listed amphibians.</p> <p>BIO-16 – Avoidance and minimization measures for burrowing owl.</p> <p>BIO-17 – Provide compensatory mitigation for impacts to occupied burrowing owl habitat.</p> <p>BIO-18 – Avoidance and minimization measures for California fully protected birds.</p> <p>BIO-19 – Avoidance and minimization measures for least Bell's vireo.</p> <p>BIO-20 – Avoidance and minimization measures for Swainson's hawk.</p> <p>BIO-21 – Provide compensatory mitigation for impacts to Swainson's hawk foraging habitat.</p> <p>BIO-22 – Avoidance and minimization measures for tricolored blackbird.</p> <p>BIO-23 – Avoidance and minimization measures for other special-status and native birds.</p> <p>BIO-24 – Avoidance and minimization measures for American badger.</p> <p>BIO-25 – Avoidance and minimization measures for special-status bats.</p> <p>BIO-26 – Avoidance and minimization measures for special-status kangaroo rats.</p> <p>BIO-27 – Avoidance and minimization measures for San Joaquin kit fox.</p> <p>BIO-28 – Provide compensatory mitigation for impacts to San Joaquin kit fox.</p>

Table ES-2. Significant but Mitigable Impacts of the Proposed Project

Impact	Mitigation Measures
Impact BIO-2 – Adversely and substantially affect native plant communities, including riparian areas or other sensitive communities	BIO-1 – Conduct surveys for special-status plants and sensitive habitats. BIO-2 – Avoidance and minimization measures for special-status plants and vegetation communities. BIO-29 – Avoidance and minimization measures for vernal pool and seasonal wetland habitats. BIO-30 – Avoidance and minimization measures for sensitive wetland habitats. BIO-31 – Provide compensatory mitigation for impacts to sensitive plant communities.
Impact BIO-4 – Have substantial adverse effects on wetlands and Waters of the U.S. and state	BIO-29 – Avoidance and minimization measures for vernal pool and seasonal wetland habitats. BIO-30 – Avoidance and minimization measures for sensitive wetland habitats. BIO-32 – Provide compensatory mitigation for impacts to wetlands and waters.
Impact CUL-1 – Cause damage, degradation to, or loss of a unique archaeological resource as defined by CEQA or a resource of archaeological, tribal, or historical value that is listed, or eligible for listing, on the National Register or California Register	CUL-1 – Prepare and implement Archaeological Resource Management and Treatment Plan for unique archeological resources.
Impact CUL-7 – Disturb any human remains, including those interred outside of formal cemeteries	CUL-2 – Treatment of inadvertent discovery of human remains.
Impact GEO-1 – Expose people or structures to potential substantial adverse effects due to slope instability, effects of earthquake (fault rupture, ground shaking, liquefaction, landslide), slumps, rockfalls, or adverse soil conditions such as compressible, expansive, or corrosive soils	GEO-1 – Conduct geotechnical investigations and implement project design recommendations.
Impact GEO-5 – Place a structure on unstable soils, which would result in exposure to landslide, lateral spreading, subsidence, liquefaction, or collapse	GEO-1 – Conduct geotechnical investigations and implement project design recommendations.
Impact PALEO-1 – Result in the loss of or inaccessibility to scientifically important paleontological resources	PALEO-1 – Conduct pre-construction survey. PALEO-2 – Document all finds. PALEO-3 – Conduct Worker's Environmental Awareness Training. PALEO-4 – Conduct paleontological mitigation monitoring. PALEO-5 – Procedures for fossil preparation, curation, and reporting.
Impact H&S-3 – Inflict serious injuries to workers, visitors to the area or area land users.	H&S-1 – Prepare a fire plan.
Impact SE-4 – Permanent displacement of existing residences or businesses	SE-1 – Acquire land rights.
Impact TRAFFIC-2 – Cause delays on a primary transportation corridor	TRAFFIC-1 – Prepare and submit Traffic Control Plans.

Chapter 1

Introduction

1.1 Project Overview

The Western Area Power Administration (Western), a power marketing administration within the U.S. Department of Energy (DOE), and the San Luis & Delta-Mendota Water Authority (Authority), a California joint powers agency, have prepared this joint Environmental Impact Statement (EIS)/Environmental Impact Report (EIR) for the San Luis Transmission Project (SLTP or Proposed Project). In conformance with the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA), this EIS/EIR is intended to inform decision makers, other agencies and the public regarding the environmental and public safety effects that could result from construction, operation, maintenance and decommissioning of the SLTP. Western is the federal lead agency under NEPA, and the Authority is the state lead agency under CEQA.

The SLTP would consist of:

- a new 500-kilovolt (kV) transmission line about 65 miles in length between the new Tracy East and Los Banos West Substations;
- a new 230-kV transmission line about 3 miles in length between the new Los Banos West Substation and Western's existing San Luis Substation;
- a new 230-kV transmission line about 20 miles in length between Western's existing San Luis Substation and Western's existing Dos Amigos Substation or a new 230-kV transmission line about 18 miles in length between the new Los Banos West Substation and Western's existing Dos Amigos Substation;
- an interconnection with the existing Western 500-kV Los Banos-Gates No. 3 transmission line just south of Pacific Gas & Electric's (PG&E) existing Los Banos Substation into the new Los Banos West Substation; and
- a new 70-kV transmission line about 7 miles in length between the existing San Luis and O'Neill Substations.

Western would construct, own, maintain and operate the lines, which would be located mostly adjacent to existing transmission lines in Alameda, San Joaquin, Stanislaus, and Merced Counties in California.

Additional components of the SLTP would include new 230-kV line terminal bays at Western's San Luis and Dos Amigos Substations, as well as a new 230/70-kV transformer bank and interconnection facilities at the San Luis Substation.

1.2 Purpose and Need

The United States Department of Interior, Bureau of Reclamation (Reclamation) entered into a contract with Pacific Gas and Electric (PG&E) in 1965 for power transmission service between Western's Tracy Substation and Reclamation's San Luis Unit (SLU) facilities near Santa Nella, California and Los Banos, California including the Gianelli Pump-Generating Plant, Dos Amigos Pumping Plant and the O'Neill Pump-Generating Plant for delivery of Central Valley Project (CVP) water supply to its Federal water service contractors. The San Luis Unit is part of the CVP and is owned by the United States. These SLU facilities pump up to 1.25 million acre-feet of water out of the California Aqueduct and the Delta-

Mendota Canal into the San Luis Reservoir for later use, including irrigation supply to about 600,000 acres of farmlands located in western Fresno, Kings, and Merced Counties.

As part of the original PG&E contract, the federal government paid PG&E \$2.6 million to provide 50 years of 230-kV transmission service to deliver federal power to Reclamation's Gianelli and Dos Amigos facilities. The existing transmission contract with PG&E expires on March 31, 2016, and PG&E has stated it will not renew the existing contract. Without the contract or a federal transmission line to serve the primary SLU facilities, the federal government will have to take transmission service under the California Independent System Operator (CAISO) Tariff between Tracy Substation and the SLU facilities using the same PG&E transmission and distribution lines that served the SLU for 50 years. The estimated increase cost to Reclamation the first year by taking service under the CAISO Tariff is expected to be \$8,000,000. Reclamation's operating costs are paid by its water service contractors.

Currently, the CAISO Tariff includes high-voltage and low-voltage Transmission Access Charges (TAC). As of March 1, 2015, the rate for the high-voltage TAC was \$10.16 per megawatt-hour (MWh) and the low-voltage TAC was \$7.64 per MWh. There are also other supplementary CAISO Tariff charges that average approximately \$6.00 per MWh. The following bullets provide a summary of Reclamation's estimated transmission costs under the CAISO Tariff:

- Assuming federal pumping load at Gianelli, O'Neill and Dos Amigos range from 300,000 to 500,000 MWh per year, the high-voltage TAC cost estimate for these facilities is \$3,048,000 to \$5,080,000 per year.
- The O'Neill facility will incur both the CAISO high-voltage and low-voltage TACs. Assuming a federal pumping load at O'Neill ranges from 60,000 to 90,000 MWh per year, the low-voltage TAC cost estimate for this facility is \$458,400 to \$687,600 per year.
- In addition to the high-voltage and low-voltage TAC charges listed above, Gianelli, O'Neill and Dos Amigos will incur CAISO Tariff charges for other services such as scheduling, management and ancillary services. The cost estimate for these services is \$1,800,000 to \$3,000,000 per year.
- The total estimated range of CAISO Tariff service costs (summation of the three bullet elements above) to be incurred by the federal government for these SLU facilities (Gianelli, O'Neill, and Dos Amigos) upon termination of the PG&E contract will range from \$5,306,400 to \$8,767,600 per year beginning April 2016.
- CAISO grid transmission users may also incur congestion charges when the scheduling capacity of existing transmission lines is exceeded, and customers must pay to mitigate for congestion.

In anticipation of PG&E's contract expiring and the substantial increase in transmission costs associated with scheduling federal power to these facilities under the CAISO Tariff, Reclamation submitted a transmission service request to Western. Under this request, Western is considering various transmission service arrangements, including the construction of new federal transmission lines not to be included in the CAISO grid. Reclamation must continue to deliver federal water after the PG&E contract expires. Western must respond to Reclamation's request for transmission service consistent with Western's Open Access Transmission Tariff (OATT) and existing laws. Reclamation, on behalf of its water contractors, is evaluating options to pump, store, convey, and deliver federal water via the SLU at reasonable cost.

Reclamation has determined the cost of constructing, operating and maintaining a new transmission line outside of the CAISO grid over a 50-year analysis is more cost effective than the estimated cost of the CAISO Tariff charges over the same period. Furthermore, the Federal transmission line will continue to

be used after that period of analysis where the capital cost of the project would have been repaid and with just O&M costs as the only continuing cost, whereas costs of transmission service from the CAISO grid would be uncertain. The preliminary cost estimate to construct the Proposed Project in 2015 dollars, based on comparative cost estimates and a 25 percent contingency, would be approximately \$400 million. This amount would be substantially below the anticipated costs that Reclamation would incur under the CAISO Tariff for the same 50-year period.

In addition to being more cost effective, the construction of a new transmission line by the federal government would provide more “cost certainty” for delivering federal power to the primary SLU loads.

CAISO cost recovery methodology is used to determine the high-voltage and low-voltage TAC. For instance, in January 2013, the CAISO high-voltage TAC was \$7.73 per MWh. In January 2015, the CAISO high-voltage TAC had increased to \$9.42 per MWh, and by March 2015, the CAISO high-voltage TAC was \$10.16 per MWh. In contrast, constructing the Proposed Project would limit any future cost increases to those necessary for operation, maintenance and replacement of the Proposed Project instead of the entire CAISO grid.

In October 2013, an eligible Western transmission customer¹ submitted a transmission service request in accordance with Western’s OATT for transmission service within the same corridor as requested by Reclamation. Western is evaluating both requests jointly in order to determine if it can satisfy Reclamation’s need and the eligible customer’s request with a single project. This Project would require at least a single-circuit 500-kV transmission line between the Tracy and Los Banos areas. Therefore, this EIS/EIR evaluates a 500-kV transmission line with an option to construct at 230-kV should the eligible transmission customer decide not to participate. It is anticipated that the eligible Western transmission customer will decide whether to participate by spring 2016.

1.3 Project Objectives

The Project objectives for the SLTP are to:

- Obtain durable, long-term, cost certain and efficient transmission delivery of CVP power from federal power generation sites to the major pumping stations of the SLU to reliably deliver water to Reclamation and the Authority’s member agencies (federal water service contractors);
- Locate and install transmission facilities in a safe, efficient, and cost effective manner that meets project needs while minimizing environmental impacts;
- Locate facilities to minimize the potential of environmental impacts resulting from damage by external sources;
- Maximize the use of existing transmission corridors and rights-of-way in order to minimize effects on previously undisturbed land and resources; and
- Obtain stable and reliable transmission that meets project needs in a cost-effective and timely manner.

¹ Pending its decision to participate in the Project, the identity of this customer is confidential. Details on the interconnection request are available at: <http://www.oasis.oati.com/wasn/index.html> (see Transmission Queue page for updates)

1.4 Agency Background

1.4.1 Western Area Power Administration

Western markets and delivers reliable, cost-based hydroelectric power and related services within the central and western United States. Western is one of four power marketing administrations within DOE that markets and transmits electricity from multi-use water projects primarily to consumer-owned utilities. Western's mission is to market and deliver clean, renewable, reliable, cost-based federal hydroelectric power and related services within 15 central and western states. Western's 17,000-mile, high-voltage transmission system carries electricity from power plants operated by Reclamation, U.S. Army Corps of Engineers (USACE), and the International Boundary and Water Commission.

The SLTP is located within Western's Sierra Nevada Region (SNR). SNR maintains and operates numerous substations and more than 1,500 circuit miles of transmission lines in five geographic regions to nearly 700 non-profit utilities. By law, Western markets power that is in excess of federal project requirements to preference customers, such as federal and state agencies, Native American tribes, electric cooperatives, municipal utilities, public utility districts, irrigation districts, and water districts. Western sells wholesale electricity to more than 70 customers in central and northern California and Nevada from the CVP and Washoe Project.

As described in Section 1.1, Western is the lead federal agency under NEPA. Under Western's OATT, Western must respond to requests for transmission services. This Draft EIS/EIR, together with the Final EIS/EIR and other permitting requirements, is the means by which Western will comply with NEPA. Findings from the EIS/EIR and all comments received will become part of the administrative record and used to make decisions on whether and how to proceed on the SLTP.

1.4.2 San Luis & Delta-Mendota Water Authority

The Authority consists of 28 federal and San Joaquin River exchange water service contractors that provide water to more than 2.1 million acres of service territory within the western San Joaquin Valley, as well as San Benito and Santa Clara Counties. The Authority was established in 1992 and assumed the operation and maintenance (O&M) responsibilities of certain CVP facilities. The Authority operates and maintains the Delta-Mendota Canal, which delivers approximately 3 million acre-feet of water within the Authority's service area, the C.W. "Bill" Jones Pumping Plant (formerly Tracy Pumping Plant), O'Neill Pumping/Generating Plant, Tracy O&M Facilities, the San Luis Drain, and several other components of the CVP.

As described in Section 1.1, the Authority is the CEQA lead agency. This EIS/EIR is intended to inform the public, other agencies, and the Authority's 19-member governing board of directors of potential environmental impacts, mitigation measures, and alternatives prior to the Authority's decision to approve or disapprove the Project.

1.4.3 Bureau of Reclamation

Reclamation is the largest wholesaler of water in the United States, supplying more than 31 million people and providing irrigation water for 10 million acres of farmland. Reclamation is also the second largest producer of hydroelectric power in the western United States with 53 power plants that provide more than 40 billion kilowatt-hours annually and generate nearly a billion dollars in power sales revenue. Reclamation's mission is to assist in meeting the increasing water demands of the western United States while protecting the environment and the public's investments in these structures.

Reclamation emphasizes fulfilling its water delivery obligations, water conservation, water recycling, and reuse goals; developing partnerships with customers, states, and Native American tribes; and finding ways to address the competing needs for limited water resources.

Reclamation owns, operates and manages the dams, power plants and canals of the CVP. The SLTP also passes through lands managed by the Reclamation. Under NEPA regulations, Reclamation is a cooperating agency involved in the preparation of the EIS/EIR for the SLTP.

1.5 Public Participation

Public involvement is a vital part of the environmental review process under NEPA and CEQA. Western provided multiple opportunities for public involvement during the development of the Draft Western EIS/EIR. These opportunities intend to establish a collaborative, systematic, and inclusive process to gather and share information and identify public concerns and issues regarding the Project.

Western and the Authority held public open-house meetings to answer questions and receive comments on the scope of the environmental analysis for the SLTP. These meetings were held on January 8, 2014, in Tracy, California and on January 9, 2014, in Santa Nella, California. The 60-day public scoping comment period began on November 22, 2013 when the Notice of Intent was published in the *Federal Register*, and the Notice of Preparation was filed with the California State Clearinghouse. The 60-day public scoping comment period ended on January 21, 2014.

Western distributed notices to 75 local agencies, 8 state agencies, 6 federal agencies, 21 organizations, and 39 elected officials. Western also sent postcards announcing the public scoping meetings and comment period to all property owners within or adjacent to the Proposed Project or alternative routes, and published advertisements on the meetings and comment period in five local newspapers. The postcards and advertisements also provided an overview map of the Project area, a brief summary of the SLTP, how to provide scoping comments, and where to find additional information on the Proposed Project.

A total of 21 unique commenters (8 individuals, 4 organizations, and 9 agencies) submitted 21 comment documents (letters, emails, faxes, and comment cards). Within these comment documents, a total of 81 individual scoping comments were submitted. These comments are summarized in the Scoping Report (Appendix B).

Additionally, two newsletters have been distributed to affected and interested landowners, organizations and agencies. The first newsletter, distributed May 2014, announced the availability of the Scoping Report and the Alternatives Screening Report on the SLTP website.² It also provided a summary of the alternatives considered and eliminated in the Draft EIS/EIR. The second newsletter, distributed February 2015, announced that a new alternative corridor (the Billy Wright Road Alternative) and two proposed new substations (the Tracy East and Los Banos West Substations) would be evaluated in the Draft EIS/EIR. It also announced the availability of an updated Alternatives Screening Report on the SLTP website.

² <http://www.sltpeis-eir.com/>

Chapter 2

Description of the Proposed Project and Alternatives

This chapter describes the Proposed Project and alternatives; proposed construction, operation and maintenance, and decommissioning activities; the Environmental Protection Measures (EPMs) and standard construction, operation, and maintenance practices that would be implemented as part of the Project. It also identifies the Environmentally Preferred Alternative.

At this time, the exact locations and quantities of project components (e.g., access roads, staging areas, pulling sites) are unknown and, in some cases, quantities of Project components are conservatively estimated (see Appendix E). To provide flexibility in siting Project components, particularly access roads that may extend outside of the proposed easements, a one-mile buffer was added on the west side of the Proposed Project and alternative corridors. The buffer was extended up to I-5 on the east side of the Proposed Project and alternative corridors, except where the Project would be located east of I-5 near the Dos Amigos Substation. The area within this buffer is referred to as the *study area*, unless otherwise defined in Chapter 3 for a specific resource. This EIS/EIR uses the term *Project area* to collectively describe the area within which Project components could be located. A *corridor* is a linear area within which the easements (also known as rights-of-way) would be located; proposed corridors are part of the Project area.

2.1 Proposed Project

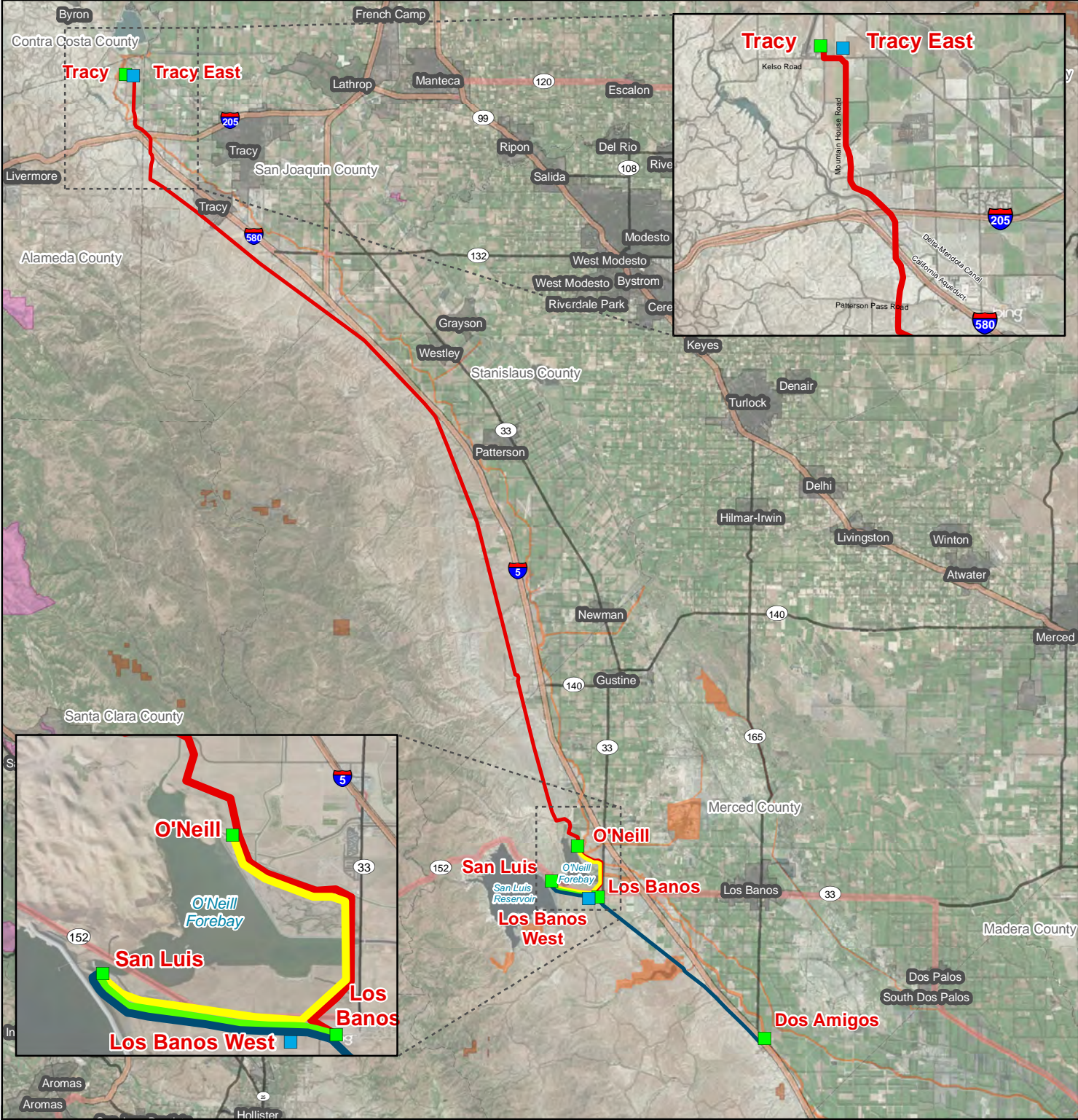
Western proposes to construct, own, operate, and maintain about 95 miles of new transmission lines within easements ranging from 125 to 250 feet wide through Alameda, San Joaquin, Stanislaus, and Merced Counties along the foothills of the Diablo Range in the western San Joaquin Valley. Western would also upgrade or expand its existing substations, make the necessary arrangements to upgrade or expand existing PG&E substations, or construct new substations to accommodate the interconnections of these new transmission lines. An overview of the Proposed Project is illustrated in Figure 2-1.

2.1.1 Overview

The Proposed Project consists of:

- **A 500-kV transmission line.** A single-circuit 500-kV transmission line, about 65 miles long, terminating at the existing, expanded, or new substations in the Tracy and Los Banos areas.
- **230-kV transmission lines.** A single-circuit 230-kV transmission line (called the “tie-line”), about 3 miles long, connecting the San Luis Substation and the existing Los Banos Substation or new Los Banos West Substation; and a single-circuit 230-kV transmission line, about 20 miles long, connecting the San Luis and Dos Amigos Substations or a single-circuit 230-kV transmission line, about 18 miles long, connecting the new Los Banos West and existing Dos Amigos Substations.
- **A 70-kV transmission line.** A single-circuit 70-kV transmission line, about 7 miles long connecting the San Luis and O’Neill Substations.

Much of the Proposed Project would be located adjacent to existing high-voltage transmission line easements along the foothills west of Interstate 5 (I-5).



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May be exempt from public release under the Freedom of Information Act (5 U.S.C.552) Exemption 2 - Circumvention of statute.

Western review required before public release.

Name/Org: SNR Date: 6/17/2015

- Existing Substations
- Proposed New Substations
- Streets
- City Boundary
- Counties

- Land Ownership
- Bureau of Land Management
 - Bureau of Reclamation
 - Local Government

- Proposed Project
- 500-kV Corridor
 - 230-kV Corridor (tie-line)
 - 230-kV Corridor
 - 70-kV Corridor

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Figure 2-1
Proposed Project Overview

Western is proposing to construct two new 500-kV substations: Tracy East Substation and Los Banos West Substation. The Tracy East Substation would be adjacent to and east of the existing Tracy Substation with a footprint of up to 50 acres (see Figure 2-6a). The Los Banos West Substation would be adjacent to and west of the existing Los Banos Substation with a footprint of up to 50 acres (see Figure 2-6c). Western may also interconnect the existing Western 500-kV Los Banos-Gates No. 3 transmission line just south of PG&E's existing Los Banos Substation into this new Los Banos West Substation. The existing Tracy, Los Banos, San Luis, and/or Dos Amigos Substations may be expanded to add new or modify existing 230-kV terminal bays. Western would also construct a 230/70-kV transformer bank and associated facilities at the San Luis Substation.

The Proposed Project would also include ancillary facilities, such as communication facilities, improvements to existing access roads, new permanent access roads, and temporary access roads to facilitate construction activities. Western would acquire the necessary easements and fee land for the Proposed Project.

2.1.1.1 500-kV Transmission Line

As shown in Figure 2-1, the proposed single-circuit 500-kV transmission line corridor would begin at the new Tracy East Substation, located at the intersection of Mountain House Road and Kelso Road, about 6 miles northwest of the City of Tracy in Alameda County. From the substation, the proposed corridor heads east along Kelso Road and turns south, adjacent to an existing 230-kV transmission line through agricultural fields. The proposed corridor then continues south and crosses the Delta-Mendota Canal (Canal) and a 69-kV transmission line. Then, it turns southeast to cross these features again and continues along the northeastern side of the canal and into San Joaquin County, crossing Interstate 205 (I-205) and a 230-kV transmission line. The proposed corridor then turns south, and continues adjacent to two existing 230-kV and 500-kV transmission lines to an area just east of PG&E's Tesla Substation, south of Patterson Pass Road.

Next, the proposed corridor turns south and runs adjacent to the east side of the existing transmission line corridor, which contains up to five high-voltage transmission lines. Along this section, the existing easements adjacent to the proposed corridor contain several 500-, 230-, and 115-kV transmission lines in various configurations. The proposed corridor would run adjacent to these transmission lines, with minor deviations to avoid existing infrastructure, south to the O'Neill Forebay.

Just north of the O'Neill Forebay, the proposed corridor would turn southeast, around the east side of the O'Neill Forebay and would terminate into the existing Los Banos Substation or the new Los Banos West Substation.

2.1.1.2 230-kV Transmission Lines

There are two new proposed single-circuit 230-kV transmission line corridors. The first 230-kV transmission line corridor would be between the existing San Luis Substation and new Los Banos West Substation; this transmission line corridor is on the south side of Highway 152 and is referred to as a "tie-line." The second proposed new 230-kV transmission line would connect the San Luis and Dos Amigos Substations or the new Los Banos West Substation and Dos Amigos Substation. This corridor heads southeast from the Los Banos area adjacent to and east of the existing PG&E transmission line. Just south of the Los Banos Reservoir, it crosses to the west of the existing PG&E transmission line corridor and continues southeast for about 7 miles until it crosses I-5 to the Dos Amigos Substation. These proposed corridors are shown in Figure 2-1.

2.1.1.3 70-kV Transmission Line

The proposed single-circuit 70-kV transmission line connects the San Luis and O'Neill Substations around the east side of the O'Neill Forebay. This component of the Proposed Project is located within the proposed 230-kV and 500-kV corridors described above (see Figure 2-1).

2.1.1.4 Operational Voltage Options

As described in Section 1.2, the operational voltage needed for the Project is dependent on the participation of an eligible transmission customer. The Proposed Project described herein assumes participation by the customer. If the customer declines to participate, one of the following operational voltage options may be selected by Western and the Authority in their decision-making processes pursuant to NEPA and CEQA.

500-kV Transmission Line operated at 230-kV

This voltage option would consist of a 500-kV transmission line constructed between the Tracy and Los Banos Substations. However, it would be operated at 230-kV. The proposed Tracy East and Los Banos West Substations would not be constructed. The 230-kV transmission line between the San Luis and Dos Amigos Substations, as well as the 70-kV transmission line between the San Luis and O'Neill Substations, are the same as the Proposed Project.

230-kV Transmission Line

This voltage option would consist of a 230-kV line constructed between the Tracy and San Luis Substations. The proposed Tracy East and Los Banos West Substations would not be constructed. The 230-kV transmission line between the San Luis and Dos Amigos Substations, as well as the 70-kV transmission line between the San Luis and O'Neill Substations, are the same as the Proposed Project.

2.1.2 Project Components

2.1.2.1 Easements

Western does not have existing transmission line easements within the Project area, and therefore, would need to acquire easements for the entire Project. Western would locate lines adjacent to existing easements or transmission lines wherever feasible. Generally, easements would be 125 to 175 feet wide for a 230-kV transmission line and 200 to 250 feet wide for a 500-kV transmission line. The actual width and location of the proposed easement within the corridor may vary depending on engineering considerations, as well as constraints identified during environmental surveys.

2.1.2.2 Access Roads

Improvements to existing access roads, new permanent access roads, and temporary access roads would be needed for construction and maintenance of the transmission line. Typically, upgrading existing roads and constructing temporary and permanent new access roads requires a construction width of 14 feet along straightaways and 16 to 20 feet around corners to facilitate safe movement of equipment and vehicles. However, all temporary roads will be restored to pre-existing conditions when they are no longer needed, and all upgraded existing roads and new permanent roads will be restored to a width of 12 feet.

Although specific locations have not been determined, new access roads for the Project would be located to minimize environmental impacts and to accommodate engineering constraints. Access roads would be occasionally graded for maintenance purposes and culverts would be added, as needed. Appendix E quantifies the estimated area of disturbance for proposed new and existing access roads

2.1.2.3 Structures

Tubular steel monopoles or lattice steel structures would be used to support the 500-kV and 230-kV lines of the Proposed Project, and smaller wood or steel monopoles would be used for the 70-kV line. Typical dimensions of the proposed structures are shown in Figures 2-2 through 2-4 and summarized in Table 2-1.

Table 2-1. Typical Structure Dimensions

Structure Type	Height (feet)	Structures Per Mile
500-kV single-circuit lattice	100-170	4 to 5
500-kV single-circuit steel pole	140-170	4 to 5
230-kV single- or double-circuit lattice	100-150	4 to 5
230-kV single- or double-circuit steel pole	125-140	4 to 5
70-kV wood or steel pole	50-70	10 to 15

Ancillary Facilities

Communication facilities, including fiber optic overhead ground wires would be installed on the transmission line structures for control and protection. Construction, expansion, and maintenance of these facilities would occur within the corridors.

2.1.3 Construction

2.1.3.1 Construction Schedule

Construction would commence after securing all required permits and land rights. Multiple crews would work simultaneously on different Project components. Table 2-2 presents Western's proposed schedule for constructing the SLTP.

Table 2-2. SLTP Proposed Construction Schedule

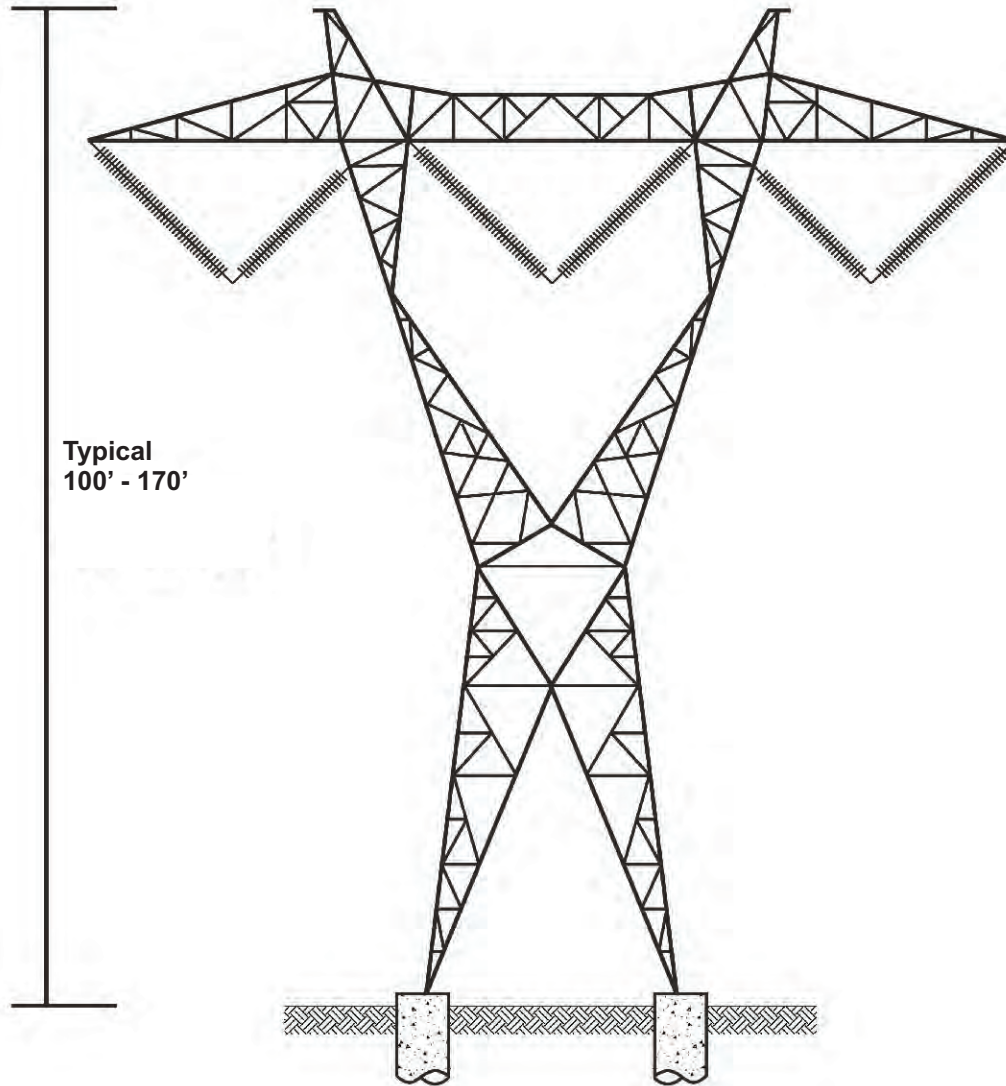
Construction Phases	Estimated Days	Estimated Schedule
Engineering and Design	430	Begin in Fall 2017
Construction	525	Begin in Summer 2018
Final Testing/Operation	135	2021

Construction generally would take place between 7 a.m. and 7 p.m., six days per week, except for those areas where local ordinances and traffic considerations dictate otherwise, in which case working hours would be consistent with local requirements.

2.1.3.2 Ground Disturbance

Ground disturbance would occur from grading construction staging areas, grading and drilling holes for new structure foundations, constructing and improving roads for vehicle and equipment access, establishing pull sites for conductor installation, as well as expanding existing and/or construction of new substations. The typical ground disturbance area for each of these activities is shown in Table 2-3. Proposed construction methods are described in the following sections.

Single-Circuit Lattice Tower



Single-Circuit Steel Pole

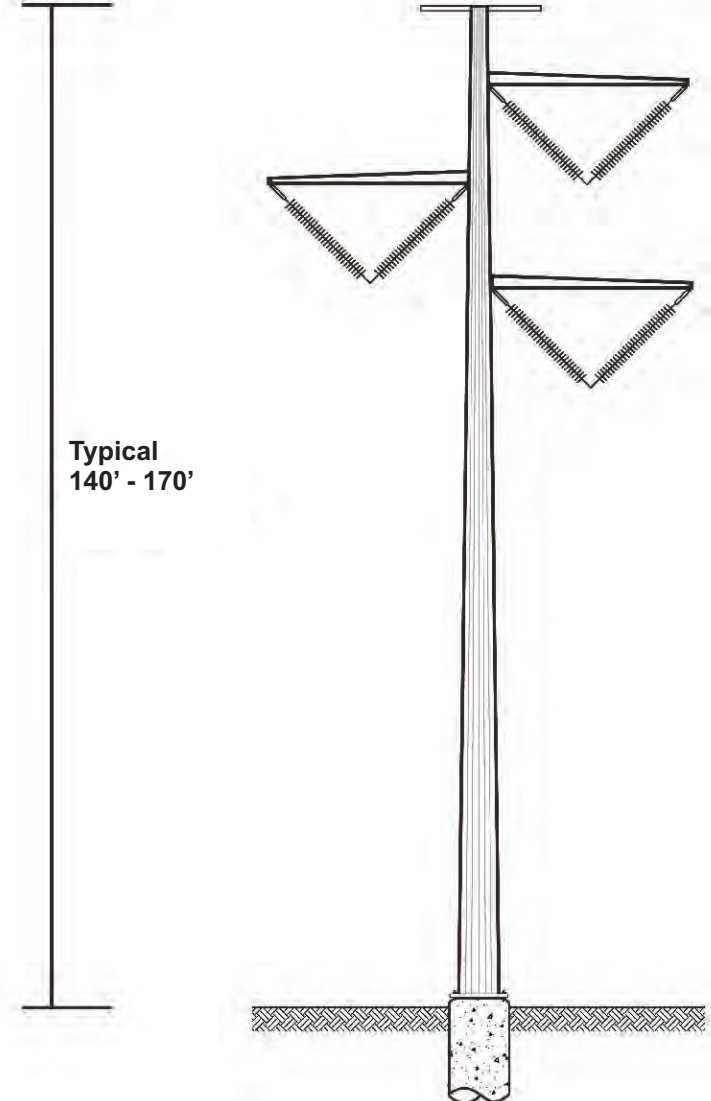
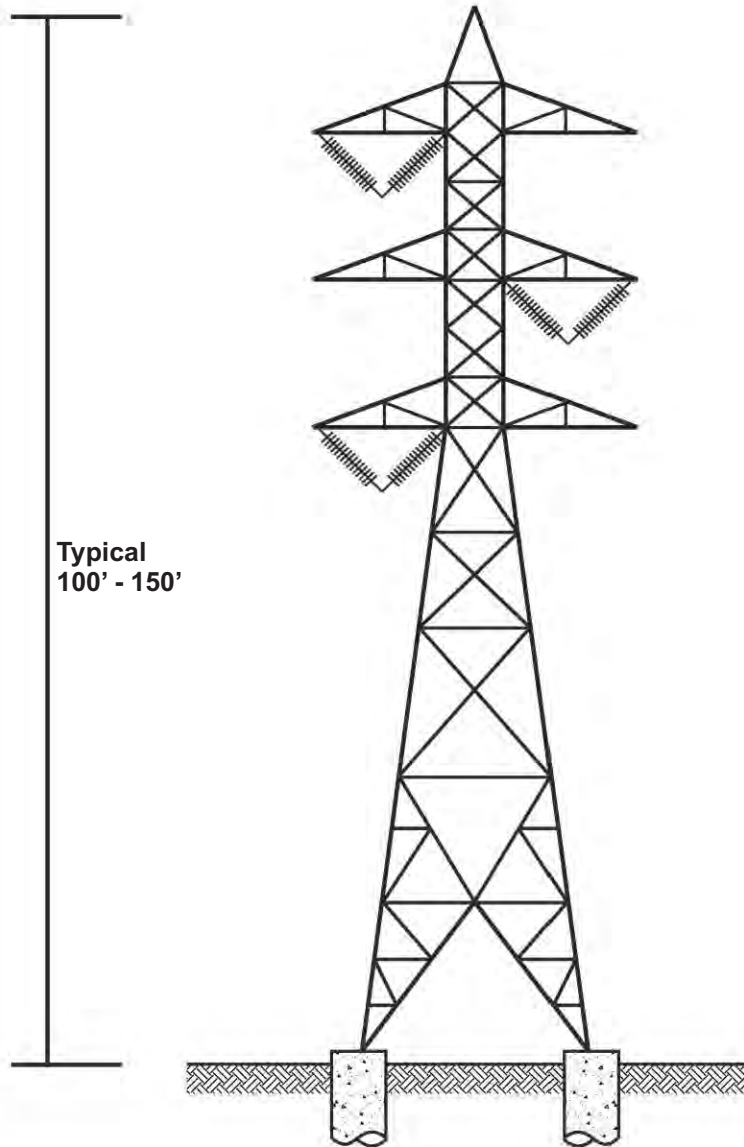


Figure 2-2

SLTP Representative 500-kV Structure Types

Single-Circuit Lattice Tower



Single-Circuit Steel Pole

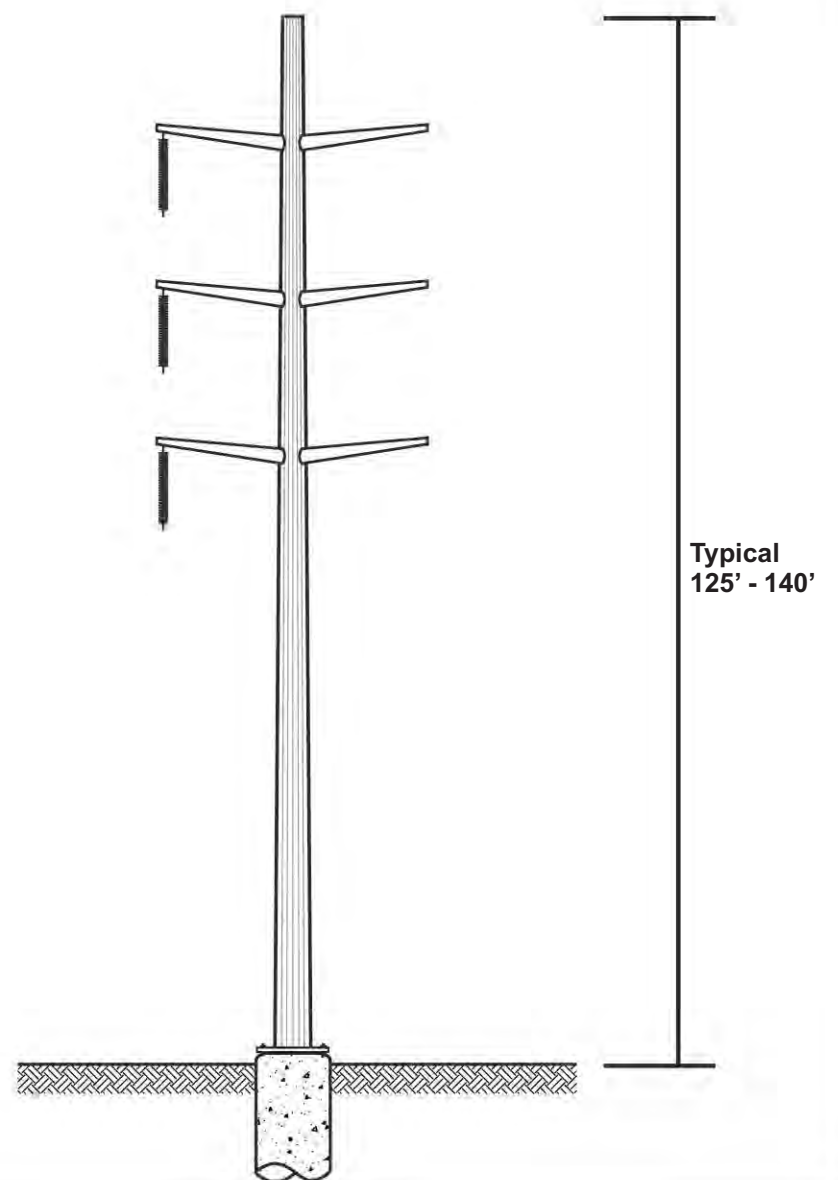


Figure 2-3

SLTP Representative 230-kV Structure Types

Single-Circuit Steel or Wood Pole

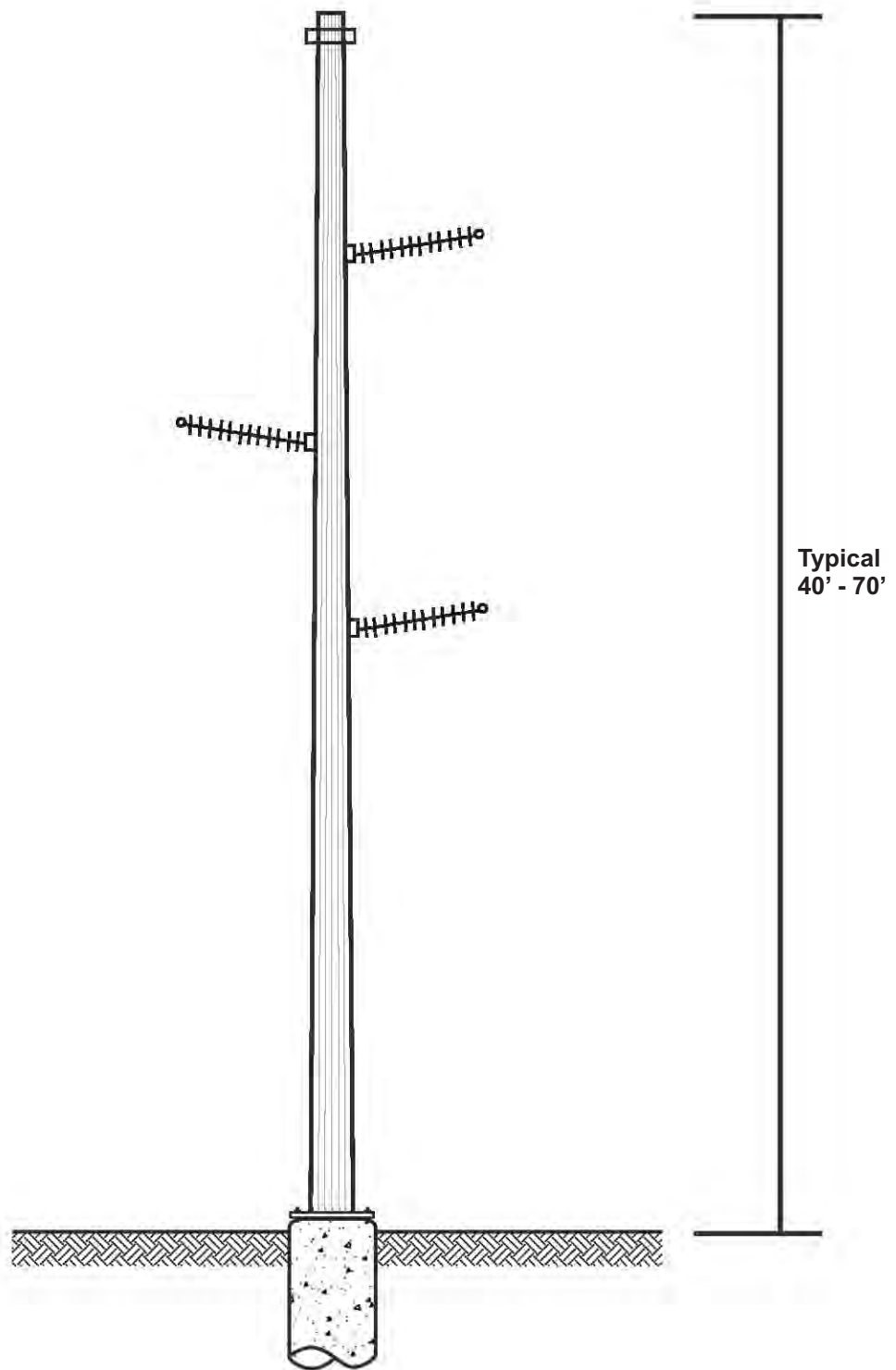


Figure 2-4

SLTP Representative 70-kV Structure Types

Table 2-3. Typical Ground Disturbance for Construction Activities¹

Activity		Temporary Disturbance	Permanent Disturbance
Staging area		5 acres every 15 miles	0 acres
Structure footing	500-kV lattice	up to 0.9 acres	up to 0.1 acres
	500-kV steel pole	up to 0.9 acres	up to 0.1 acres
	230-kV lattice	up to 0.6 acres	up to 0.1 acres
	230-kV steel pole	up to 0.6 acres	up to 0.1 acres
	70-kV wood or steel pole	up to 0.1115 acres	up to 0.0001 acres
Foundation excavation	500-kV and 230-kV lattice and steel poles	40 feet deep, 12 feet in diameter	0 acres ²
	70-kV wood or steel pole	8 to 10 feet deep, 4 feet in diameter	0 acres ²
Conductor pull site		0.4 acres	0 acres
Access road construction/improvement		Up to 30 feet wide	12 feet wide
Tracy, Los Banos, San Luis, and Dos Amigos Substation expansion		up to 0.1 acres within existing substation	up to 0.1 acres within existing substation
Tracy East Substation		0 acres	up to 50 acres
Los Banos West Substation		0 acres	up to 50 acres

1 - These dimensions represent worst-case and are used in the impact analysis of Chapter 4, but could be reduced during final engineering design or consultation with resources agencies. Note that these dimensions will be influenced by topography, location, easement width, etc. Also see Appendix E for details on disturbance assumptions.

2 - Included in structure footings

2.1.3.3 Construction Equipment and Workforce

Typical quantities of personnel and equipment needed for proposed construction activities are shown in Table 2-4. The tasks would be conducted in stages; therefore, personnel and equipment would not be working on all tasks simultaneously at a given location, but there would be some overlap in tasks.

Table 2-4. Typical Personnel and Equipment

Activity	Personnel	Equipment	
Right-of-Way (access roads and vegetation clearing)	2 to 4 equipment operators	<ul style="list-style-type: none"> ▪ 1 motor grader ▪ 2 pickup/trucks 	<ul style="list-style-type: none"> ▪ 2 bulldozers ▪ 1 backhoe
Excavation for foundations	4 to 8 laborers/equipment operators	<ul style="list-style-type: none"> ▪ 2 augers ▪ 2 backhoes 	<ul style="list-style-type: none"> ▪ 2 pickup trucks ▪ 2 compressors
Foundation installation (anchor bolt/rebar cages)	4 to 6 laborers/equipment operators 3 to 5 ironworkers	<ul style="list-style-type: none"> ▪ 2 flat-bed trucks ▪ 2 pickup trucks ▪ 2 air compressors ▪ 2 hydro lifts ▪ 2 welders 	<ul style="list-style-type: none"> ▪ 2 to 3 mixer trucks per structure for direct-embedded foundations ▪ 10 to 12 mixer trucks per structure anchor bolt foundations
Structure assembly and erection	4 to 6 linemen/laborers and crane operators	<ul style="list-style-type: none"> ▪ 2 hydro-cranes ▪ 2 tractors 	<ul style="list-style-type: none"> ▪ 2 manlifts ▪ 2 pickup trucks
Helicopter use	1 pilot 1 ground person fueler	<ul style="list-style-type: none"> ▪ Helicopter Hughes 500 ▪ fuel truck 	
Conductor stringing	20 to 25 linemen/groundmen	<ul style="list-style-type: none"> ▪ 2 pullers ▪ 2 tensioners ▪ 2 bulldozers ▪ 4 reel trailers 	<ul style="list-style-type: none"> ▪ 1 materials truck ▪ 2 manlifts ▪ 5 to 6 pickup trucks ▪ 1 light truck

Table 2-4. Typical Personnel and Equipment

Activity	Personnel	Equipment
Disturbance area restoration (Cleanup and Revegetation)	3 to 6 laborers	<ul style="list-style-type: none"> ▪ 1 bulldozer w/ripper ▪ 1 blader ▪ 1 front-end loader
Substation improvement and expansion	20-25 electricians, linemen, laborers, equipment, operators, and ironworkers	<ul style="list-style-type: none"> ▪ 2 flatbed trucks ▪ 2 bulldozers ▪ 2 cranes ▪ 2 excavators ▪ 5 pickup trucks ▪ 1 fuel truck ▪ 1 puller
Substation construction (Tracy East and Los Banos West)	20-40 electricians, linemen, laborers, equipment, operators, and ironworkers	<ul style="list-style-type: none"> ▪ 1 tractor/harrow/disc ▪ 1 light truck ▪ 1 tensioner ▪ 2 reel trailers ▪ 1 tractor ▪ 2 materials trucks ▪ 1 blader ▪ 2 mixer trucks ▪ 1 front end loader
		<ul style="list-style-type: none"> ▪ 2 flatbed trucks ▪ 2 bulldozers ▪ 2 cranes ▪ 2 excavators ▪ 5 pickup trucks ▪ 1 fuel truck ▪ 1 puller
		<ul style="list-style-type: none"> ▪ 1 tensioner ▪ 2 reel trailers ▪ 1 tractor ▪ 2 materials trucks ▪ 1 blader ▪ 2 mixer trucks ▪ 1 front end loader

2.1.3.4 Construction Staging

Temporary construction staging areas would be needed to store and stage materials, construction equipment, and vehicles. Although the exact locations have not been determined, locations would be selected that minimize ground disturbance.

2.1.3.5 Right-of-Way Access and Improvements

Construction of a new transmission line requires access to each tower site for construction crews, materials, and equipment. Access to each site would be on an existing road where feasible or on new roads. Existing roads may need to be improved.

Improving existing access roads would involve brush clearing, grading, erosion control and the installation of culverts or rip-rap to maintain stormwater flows within ephemeral wash areas. Lost surface material would be replaced and the road would be graded and shaped. A motor grader is the primary equipment type used to conduct this work, but bulldozers may be used in some areas. Watering may be required to control dust and to retain fine surface rock.

In determining the final location of new roads, large trees or other natural features will be avoided. New access roads would be constructed using a bulldozer or grader, followed by a roller to compact and smooth the ground. Front-end loaders would be used to move the soil locally or offsite.

After Project construction, existing and new permanent access roads would be used by maintenance crews and vehicles for inspection and maintenance activities. Temporary construction roads not required for future maintenance access would be removed and restored to pre-construction condition to the extent feasible.

2.1.3.6 Excavation and Foundation Installation for Transmission Line Structures

Installation of structure foundations may require grading and vegetation removal. Where grading is needed, topsoil would be removed and stockpiled for use in site restoration. Temporary topsoil stockpiles would be protected from erosion during construction. Excavating transmission structure

foundations is typically done with a backhoe, front-end loader, or pressure auger. Excavation to bedrock or other suitable base material would be required. A rock drill may be used if rock is encountered during excavation. Four holes would be excavated for each lattice structure and one for each tubular steel or wood pole.

Reinforced concrete foundations would be used for most structures. After the foundation concrete is placed, a mechanical tamp would be used to re-compact soil around the foundation. The disturbed area would be re-graded so that surfaces drain naturally, blend with the natural terrain, and are left in a condition that will facilitate re-vegetation or re-seeding, provide for proper drainage, and prevent erosion.

2.1.3.7 Structure Assembly and Erection

Structure components would typically be transported to installation sites by truck or helicopter. Structures would be erected with cranes. Structure assembly equipment may include cranes (ground or helicopter), augers, bulldozers, bucket trucks, backhoes, air compressors, electric generators, pickup trucks and other vehicles, machinery, and equipment. Structures would be assembled, erected, and attached to the foundations (see Figure 2-5).

2.1.3.8 Conductor Stringing

Conductor stringing would occur at designated pull and tensioning sites (see Figure 2-5). Generally the pull sites would be located within the easement. Angle-structure pull sites would require temporary easement rights if located outside the easement to pull the conductor on a straight line. The locations of pull sites depend on environmental constraints, conductor length, and equipment access. Pull sites would be located within the study area.

Large reels of conductor would be transported to the staging areas or pulling sites on flatbed trucks. Other equipment would include stringing trailers, tensioning machines, pullers, bulldozers, and several trucks including a bucket truck.

Temporary stringing sheaves or travelers (pulleys) would be attached on the cross-arms of each structure at the bottom of the insulator strings. A sock line (rope or lightweight wire) would then be strung from structure to structure through the stringing sheaves. This may be completed using a helicopter. A pulling line would then be attached to the end of the sock line and pulled back through the sheaves between pull site locations. Conductor would then be strung using the pulling line.

Powered pulling equipment would be used at one end and tensioning equipment would be used at the other end to establish the proper tension and sag for crews to permanently “clip” conductors onto structure hardware, and to maintain the proper ground clearance for the conductors. After conductors are clipped in, the stringing sheaves would be removed and the new conductor would be connected to the insulators hanging from the cross-arms. Ground wire would be installed last and would be attached to the top of the structures using a pulling technique similar to that used for the conductors.

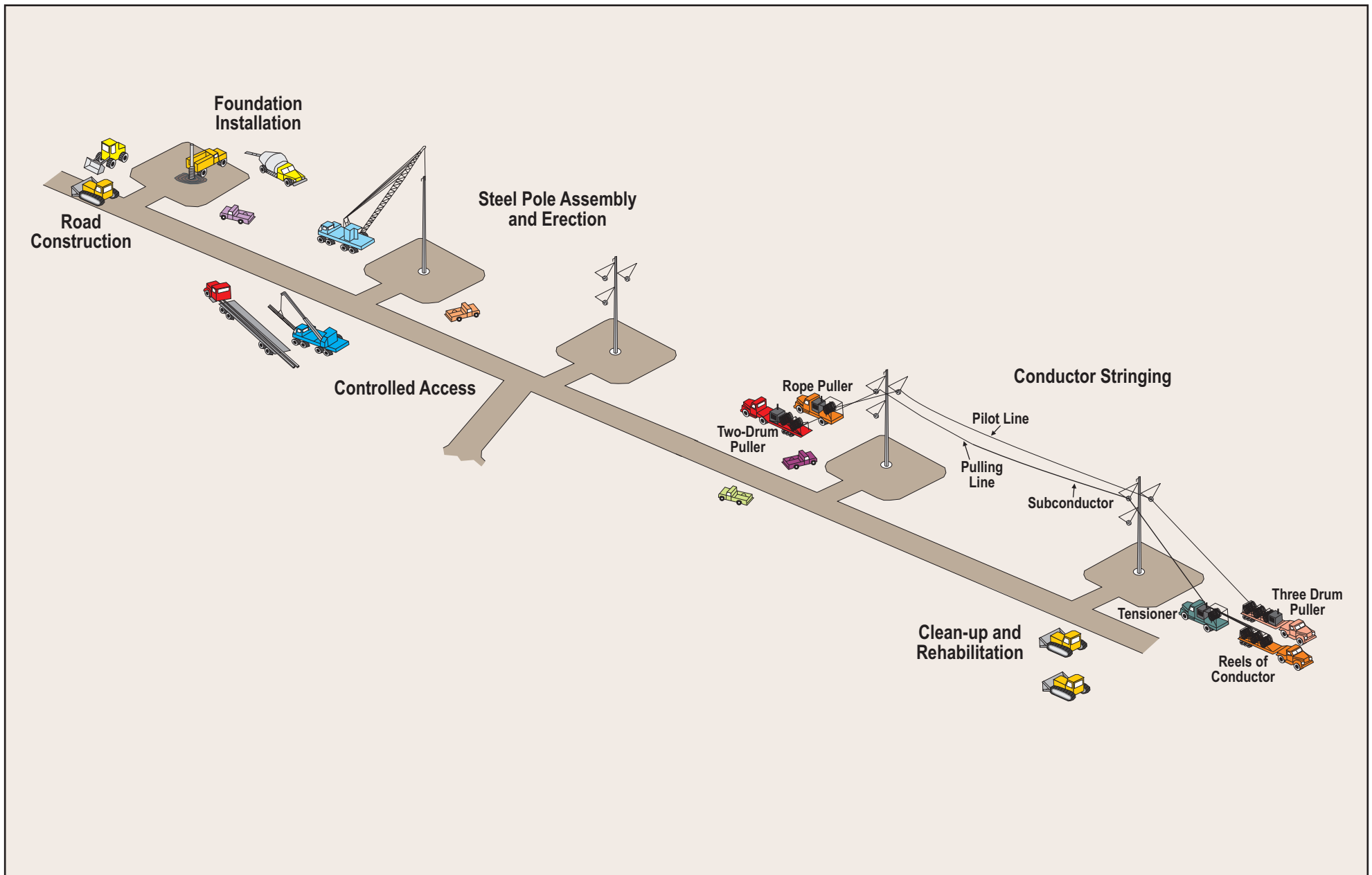


Figure 2-5
Typical Tower Construction and
Wire Constringing Activities and Equipment

2.1.3.9 Substations

Existing Substations

Modifications to and/or expansion of existing substations would be needed to interconnect SLTP facilities. Modifications may include constructing new 230-kV line terminal bay facilities at the Tracy, San Luis, Los Banos and/or Dos Amigos Substations. Expansion of existing substations may be required if the existing substations are unable to accommodate a new terminal bay. Western also would construct a new 230/70-kV transformer bank bay and interconnection facility at the San Luis Substation. To accommodate these modifications, the existing substations may be expanded within the limits of the Project area.

Proposed New Substations

Generally, substation construction would include site grading, property and substation fencing, and installation of electrical facilities. The site would be excavated and graded to accommodate the required construction and permanent facility buildings, equipment and electrical structures. A fence would be erected around the substation perimeter. Up to 50 acres would be graded for each new substation. Area lighting would be provided by multiple 300-watt tungsten-quartz lamps mounted near major electrical equipment. Additionally, downward-oriented 100-watt yellow flood lamps would be placed near entrances and the substation gate for night entry and would remain on throughout the night.

The electrical facilities proposed for the new Tracy East Substation would accommodate the termination of one 500-kV transmission line. These facilities would include a 500-kV terminal bay, associated breakers, disconnect switches, protective relays, metering and Supervisory Control and Data Acquisition (SCADA) system equipment and associated features.

The electrical facilities proposed for the new Los Banos West Substation would accommodate the termination of three 500-kV transmission lines and one 230-kV transmission line. These facilities would include three 500-kV terminal bays a 230-kV terminal bay, a 500/230-kV transformer bay and associated breakers, disconnect switches, protective relays, metering and Supervisory Control and Data Acquisition (SCADA) system equipment and associated features.

2.1.3.10 Disturbance Area Restoration

Areas temporarily disturbed by construction would be restored to pre-construction conditions, to the extent feasible. Western would re-grade disturbed areas to establish original contours, and redistribute topsoil. All disturbed soil, other than surfaces intended for permanent access roads, would be seeded with native species free of invasive seeds. Where necessary, water diversions (i.e., waterbars) would be constructed along access roads to control surface water drainage and erosion. See Appendix E for SLTP ground disturbance assumptions.

2.1.4 Operation and Maintenance

Western must comply with North American Electric Reliability Corporation and Western Electricity Coordinating Council standards and requirements for transmission system reliability, including maintenance and vegetation management. In order to comply with these requirements, Western has a comprehensive O&M program for all of its property and facilities including transmission lines, substations, communication facilities, and legal access roads. This O&M program ensures reliability of the transmission systems and safe, all-weather access to the transmission line structures and other Western facilities. The O&M activities proposed for the SLTP would be consistent with Western's O&M program, which is presented in Appendix D.

2.1.5 Decommissioning

If no longer needed, any one of the transmission lines would be removed. Removed facilities would include wires, insulators, hardware, structures, and foundations from the easements. All decommissioning activities would occur within the same disturbance area identified for construction.

Material would be disposed of in accordance with applicable regulations, and may be salvaged or sold. The equipment required to safely remove the wires and structures would be nearly the same as that required for installation. Following removal, any areas disturbed during line dismantling would be restored and rehabilitated. Disturbed surfaces would be restored to the original contour. All disturbed soil, other than surfaces intended for permanent access roads, would be seeded with native species free of invasive seeds.

Western would reclaim temporary service roads following abandonment in accordance with land management agency or landowner agreements. Equipment and personnel for restoration operations would be similar to that required at the end of construction. Where required by the land management agency or landowner, compacted areas would be ripped (with a dozer) and sediment control measures (e.g., revegetation) would be implemented.

2.1.6 Environmental Protection Measures and Construction Standards

Western implements Environmental Protection Measures (EPMs) and Construction Standards to reduce environmental consequences associated with its construction and maintenance activities. The analysis of environmental consequences (Chapter 4) accounts for the EPMs listed in Table 2-5 and the Construction Standards presented in Appendix F, which would be implemented as part of the Project.

Table 2-5. Environmental Protection Measures

Resource	EPM
Air Quality	Project participants will comply with federal, state, and local rules and regulations regarding air quality.
Air Quality	Equipment and vehicles will be operated in compliance with federal, state, and local rules and regulations regarding air quality.
Air Quality	Vehicles and equipment used in construction and maintenance of the Proposed Project or alternatives will maintain appropriate emissions control equipment and be appropriately permitted.
Air Quality	Regular watering of exposed soils and unpaved access roads will be conducted during the construction period.
Air Quality	Engine idling will be in accordance with an idling policy compliant with the California state regulations.
Air Quality	If new sulfur hexafluoride equipment is installed as part of the Project, Western will include this information in their annual reports to California Air Resources Board and the Environmental Protection Agency. Best management practices will be followed to eliminate sulfur hexafluoride emissions during installation and commissioning.
Biological Resources	All Western and contract crews will complete biological awareness training to ensure they are familiar with sensitive biological resources and the associated EPMs and mitigation measures. All supervisors and field personnel will have on file a signed agreement that they have completed the training, and understood and agreed to the terms. EPMs and applicable mitigation measures will be written into the contract for construction and O&M work, and contractors will be held responsible for compliance.
Biological Resources	Vehicle traffic will be restricted to designated access routes and the immediate vicinity of construction and O&M sites. Vehicle speeds will not exceed 15 mph on nonpublic access and maintenance roads and 10 mph on unimproved access routes. Vehicles and equipment will be parked on pavement, existing roads, and previously disturbed areas, to the extent feasible.
Biological Resources	No pets or firearms will be permitted at Project sites.

Table 2-5. Environmental Protection Measures

Resource	EPM
Biological Resources	At the end of each work day, construction and O&M workers will leave work areas and adjacent habitats to minimize disturbance to actively foraging animals, and remove food-related trash from the work site in closed containers for disposal. Workers will not deliberately or inadvertently feed wildlife.
Biological Resources	Nighttime construction and O&M activities will be minimized to emergency situations. If nighttime construction and O&M work is required, lights will be directed to the minimum area needed to illuminate Project work areas. If night time work is required, a speed limit of 10 mph will be enforced on all nonpublic access roads.
Biological Resources	Mortalities or injuries to any wildlife that occur as a result of Project- or maintenance-related actions will be reported immediately to the Western Natural Resources Department or other designated point of contact, who will instruct construction and O&M personnel on the appropriate action, and who will contact the appropriate agency if the species is listed. The phone number for the Western Natural Resources Department or designated point of contact will be provided to the construction contractors, maintenance supervisors and to the appropriate agencies.
Biological Resources	Caves, mine tunnels, and rock outcrops will never be entered, climbed upon, or otherwise disturbed.
Biological Resources	If a pesticide label stipulates a buffer zone width for protection of natural resources that differs from that specified in a Project mitigation measure or EPM, the buffer zone width that offers the greatest protection will be applied.
Biological Resources	At completion of work and at the request of the landowner/manager, all work areas except access roads will be scarified or left in a condition that will facilitate natural or appropriate vegetation, provide for proper drainage, and prevent erosion.
Biological Resources	Prior to any application of herbicide, Western will query the California Department of Pesticide Regulation PRESCRIBE database, entering location information by county, township, range, and section, entering both the commercial name and the formulation of the desired pesticide, and will follow all use limitations provided to ensure compliance with applicable pesticide standards. This database is currently located at http://www.cdpr.ca.gov/docs/endspec/prescint.htm . The measures generated by the PRESCRIBE database will supersede those in the Project EPMs where they are different.
Biological Resources	Seed mixtures applied for erosion control and restoration will be certified as free of noxious weed seed, and will be composed of native species or sterile nonnative species.
Biological Resources	Equipment will be washed prior to entering sensitive areas within the Project area to control noxious weeds. The rinse water will be disposed of through the sanitary sewage system or other appropriate disposal method that minimizes the spread of noxious weeds.
Biological Resources	Measures described in the Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006 (Avian Power Line Interaction Committee 2006 or more current version) and Reducing Avian Collisions with Power Lines: The State of the Art in 2012 (Avian Power Line Interaction Committee 2012 or more current version) will be implemented during O&M activities to minimize bird mortality and injury. At such time when Western finalizes an Avian Protection Plan, Western will adhere to the guidance in that document.
Biological Resources	Construction and O&M excavations greater than 3 feet deep will be fenced, covered, or filled at the end of each working day, or have escape ramps provided to prevent the entrapment of wildlife. Trenches and holes will be inspected for entrapped wildlife before being filled. Any entrapped animals will be allowed to escape voluntarily before construction and O&M activities resume, or they may be removed by qualified personnel, with an appropriate handling permit if necessary.
Biological Resources	A hazardous-spill plan will be developed prior to construction and will remain in effect for all O&M activities. The plan will describe what actions will be taken in the event of a spill of toxic or hazardous materials. The plan will incorporate preventive measures to be implemented for vehicle and equipment staging, cleaning, maintenance, and refueling, and for containment management and storage of hazardous materials, including fuel. In the event of a contaminant spill, work at the site will immediately cease until the contractor has contained and mitigated the spill. The contractor will immediately prevent further contamination, notify appropriate authorities, notify Western's regional environmental manager, and will mitigate damage as appropriate. Adequate spill containment materials, such as oil diaper mats and hydrocarbon cleanup kits, will be available on site at all times, as will containers for storage, transportation, and disposal of contaminated absorbent materials.

Table 2-5. Environmental Protection Measures

Resource	EPM
Cultural Resources, Paleontological Resources	Before construction, all construction personnel will be instructed by Western on the protection of cultural and paleontological resources and that cultural and paleontological resources might be present in the study area. To assist in this effort, the construction contract will address applicable federal and state laws regarding cultural and paleontological resources, including historic and prehistoric resources, and fossils. Construction personnel will be informed of the penalties for collection and removal of such resources, as well as the importance of these resources and the purpose and necessity of protecting them. Contractors will be trained to stop work near any discovery and notify Western's regional environmental manager immediately, who will ensure that the resource is evaluated and avoided. Known cultural and paleontological resources will be flagged for avoidance and a minimum distance maintained for work disturbances.
Cultural Resources	Western will have qualified archaeological monitors on site during ground disturbing construction activities. Archaeological monitors will look for any inadvertent cultural resource discoveries or other sensitive resources that may be important to tribes. Archaeologists will stop work in the immediate area should any such resources be uncovered until an assessment of the find can be made by Western.
Cultural Resources	Cultural resources would be considered during post-EIS/EIR phases of Project implementation. Surveys would be completed prior to any ground disturbing activities or Project construction activities in order to inventory and evaluate cultural resources of the Project, or of any components that might be added to the Project, or any existing components that would be modified. These surveys and any resulting historic property evaluation and analysis of effects would be conducted in accordance with Section 106 of the National Historic Preservation Act (NHPA) and in consultation with the State Historic Preservation Officer (SHPO). If adverse effects to historic properties cannot be avoided, Western would develop a Programmatic Agreement (PA) or Memorandum of Agreement (MOA) in consultation with the SHPO to determine appropriate mitigation to avoid lessen any adverse effects to cultural resources.
Geology, Soils, and Mineral Resources	Erosion control measures will be implemented to prevent loss of soil. Construction will be in conformance with Western's Integrated Vegetation Management Environmental Guidance Manual.
Land Use and Agriculture	Post proper signage in areas within the easement that will require temporary closure or limited access to accommodate certain land uses. Where feasible, construction activities would be scheduled to minimize impacts to agricultural activities. If this is not feasible and damage occurs, the landowner may be compensated.
Land Use and Agriculture	On completion of the work, all work areas except permanent access roads will be returned to pre-construction conditions unless otherwise specified by the landowner/manager.
Land Use and Agriculture	During construction, movement will be limited (to the greatest extent feasible) to the access roads and within a designated area in the easement to minimize damage to agricultural land.
Land Use and Agriculture	Damaged fences and gates will be repaired or replaced to restore them to their pre-construction condition.
Land Use	Construction and operations will be conducted in a manner that prevents unnecessary destruction, scarring, or defacing of the natural surroundings and to preserve the natural landscape to the extent practicable.
Land Use	No permanent discoloring agents will be applied to rocks or vegetation to indicate limits of survey.
Noise	All vehicles and equipment will be equipped with required exhaust noise abatement suppression devices.
Traffic and Transportation	Western will restrict all necessary lane closures or obstructions on major roadways associated with construction activities to off-peak periods to avoid substantial traffic congestion and delays.
Traffic and Transportation	Western will ensure that roads or sidewalks damaged by construction activities will be properly restored to their pre-construction condition.
Traffic and Transportation	Conform with safety requirements for maintaining the flow of public traffic and conduct construction and operations to minimize obstruction and inconvenience to public transportation.
Traffic and Transportation	Mark structures and/or shield wire with highly visible devices for identified locations, as required by applicable laws and regulations (for example, Federal Aviation Administration regulations).

Table 2-5. Environmental Protection Measures

Resource	EPM
Water Resources, Wetlands	Runoff from the construction and O&M sites will be controlled and meet RWQCB stormwater requirements and the conditions of a construction storm water discharge permit. A stormwater pollution prevention plan will be prepared and implemented.
Water Resources and Floodplains	All contaminated discharge water created by construction and O&M activities (e.g., concrete washout, pumping for work area isolation, vehicle wash water, drilling fluids) will be contained and disposed of in accordance with applicable federal, state, and local regulations.
Water Resources and Floodplains	All fill or rip-rap placed within a stream or river channel will be limited to the minimum area required for access or protection of existing Western facilities.
Water Resources and Floodplains	All equipment will be stored, fueled, and maintained in vehicle staging areas 300 feet or the maximum feasible distance from any aquatic habitat (vernal pool, vernal pool grassland, seasonal wetland, seep, spring, pond, lake, river, stream, or marsh) and no closer than 200 feet unless a bermed (no ground disturbance) and lined refueling area is constructed and hazardous-material absorbent pads are available in the event of a spill. Vehicles and construction equipment will be inspected daily for fluid leaks before leaving staging areas during construction and O&M activities. Fluid leaks will be repaired before equipment is moved from staging areas.
Water Resources and Floodplains	All instream work, such as culvert replacement or installation, bank recontouring, or placement of bank protection below the high-water line, will be conducted during no-flow or low-flow conditions and in a manner to avoid impacts to water flow, and will be restricted to the minimum area necessary for completion of the work.
Water Resources and Floodplains	All equipment used below the ordinary high-water mark will be free of exterior contamination.
Water Resources and Floodplains	Excavated material or other construction materials will not be stockpiled or deposited near or on stream banks, lake shorelines, or other watercourse perimeters.
Water Resources and Floodplains	Non-biodegradable debris will be collected and removed from the easement daily and taken to a disposal facility. Slash and other biodegradable debris will be left in place or disposed of.
Water Resources and Floodplains	All soil excavated for structure foundations will be backfilled and tamped around the foundations, and used to provide positive drainage around the structure foundations. Excess soil will be removed from the site and disposed of appropriately. Areas around structure footings will be reseeded with native plants.
Water Resources and Floodplains	Wherever feasible, new structures and access roads will be sited out of floodplains. Bridges will be used at new stream crossings wherever feasible. If avoidance is infeasible, Western will consult with U.S. Army Corps of Engineers (USACE) and obtain permits as required.
Water Resources and Floodplains	If wet areas cannot be avoided, Western will use vehicles, ground mats, and equipment that minimize ground impacts.
Water Resources and Floodplains	Construction vehicle movement outside of the easement will be restricted (to the extent feasible) to approved access or public roads.
Water Resources and Floodplains	Where feasible, all construction activities will be rerouted around wet areas while ensuring that the route does not cross sensitive resource areas.

2.2 Alternatives Development

One of the most important aspects of the NEPA and CEQA processes is the identification and assessment of reasonable alternatives that have the potential for avoiding or minimizing the impacts of a Proposed Project. This EIS/EIR presents a range of alternatives based on whether or not the alternatives meet (1) most of the project objectives/purpose and need; (2) are considered potentially feasible; and (3) would avoid or substantially lessen any potential significant effects of the Proposed Project. For additional information on the alternatives development process refer to the Alternatives Screening Report (ASR) in Appendix A.

2.2.1 Corridor Alternatives

The alternatives presented below have been chosen for detailed analysis in the EIS/EIR through the alternative screening process. Alternative corridors begin and end at points in common with the Proposed Project and other alternatives. The Project area was divided at the common points into four segments in order to facilitate a fair or equal comparison between the impacts of the alternatives and the Proposed Project. Table 2-6 and Figures 2-6a through 2-6e present the segments and the alternatives retained for analysis within each segment.

Table 2-6. Alternatives by Segment

Segments	Number of Alternatives	Alternative Name(s)
North Segment	0	None
Central Segment	1	Patterson Pass Alternative
San Luis Segment	2	Butts Road Alternative West of Cemetery Alternative
	1 (70-kV)	West of O'Neill Forebay Alternative
South Segment	2	San Luis to Dos Amigos Alternative Billy Wright Road Alternative

2.2.1.1 Patterson Pass Road Alternative

An alternative corridor would extend from a point near Patterson Pass Road in the north to a point near Butts Road in the south. It would run parallel to the Proposed Project, but on the western side of the existing high-voltage transmission lines, further from I-5 for approximately 48 miles.

2.2.1.2 Butts Road Alternative

At Butts Road, this alternative corridor would continue south on the west side of the existing transmission corridor for approximately 2.2 miles. At about McCabe Road, this alternative would turn southwest for about 4.0 miles, crossing State Route (SR) 152 and bypassing the existing San Luis Substation. This alternative would then head east paralleling SR 152 to the south for 2.8 miles where it would interconnect with the Los Banos Substation or new Los Banos West Substation, using the same corridor as tie-line. This alternative would be about 10 miles in length.

2.2.1.3 West of Cemetery Alternative

At Butts Road, this alternative would head west and then south from the existing transmission corridor and then extend around the west side of the San Joaquin Valley National Cemetery (Cemetery) for approximately 2.6 miles. At this point, it would begin to follow an existing PG&E 500-kV corridor for about 1.4 miles until it turns southwest, crossing SR 152 and bypassing the existing San Luis Substation. This alternative would then head east paralleling SR 152 to the south for 2.8 miles where it would interconnect with either the existing Los Banos Substation or new Los Banos West Substation, using the same corridor as the tie-line. This alternative would be about 10 miles in length.

2.2.1.4 West of O'Neill Forebay 70-kV Alternative

This alternative corridor would extend from the San Luis Substation, cross SR 152, and run northeast for about 1 mile. At this point, it would begin to follow an existing PG&E transmission corridor for about 2.6 miles around the west side of the O'Neill Forebay to a point just north of McCabe Road. At that point, it would turn east and then turn to the southeast, in the preferred corridor, around the northeast side of the Forebay, following another PG&E high-voltage transmission corridor, to a point where it would terminate at the O'Neill Substation.

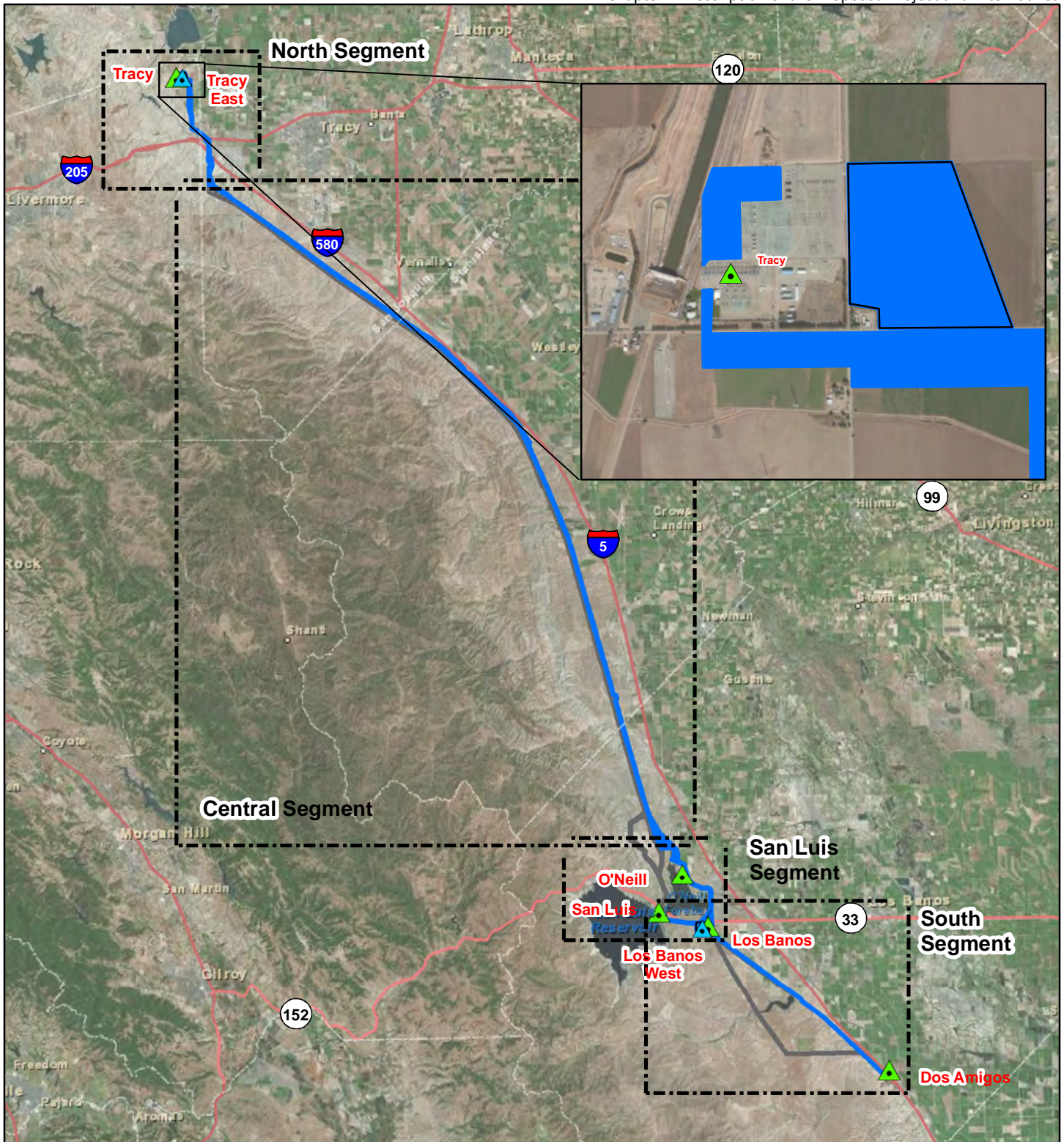


Figure 2-6a.

Project Segments



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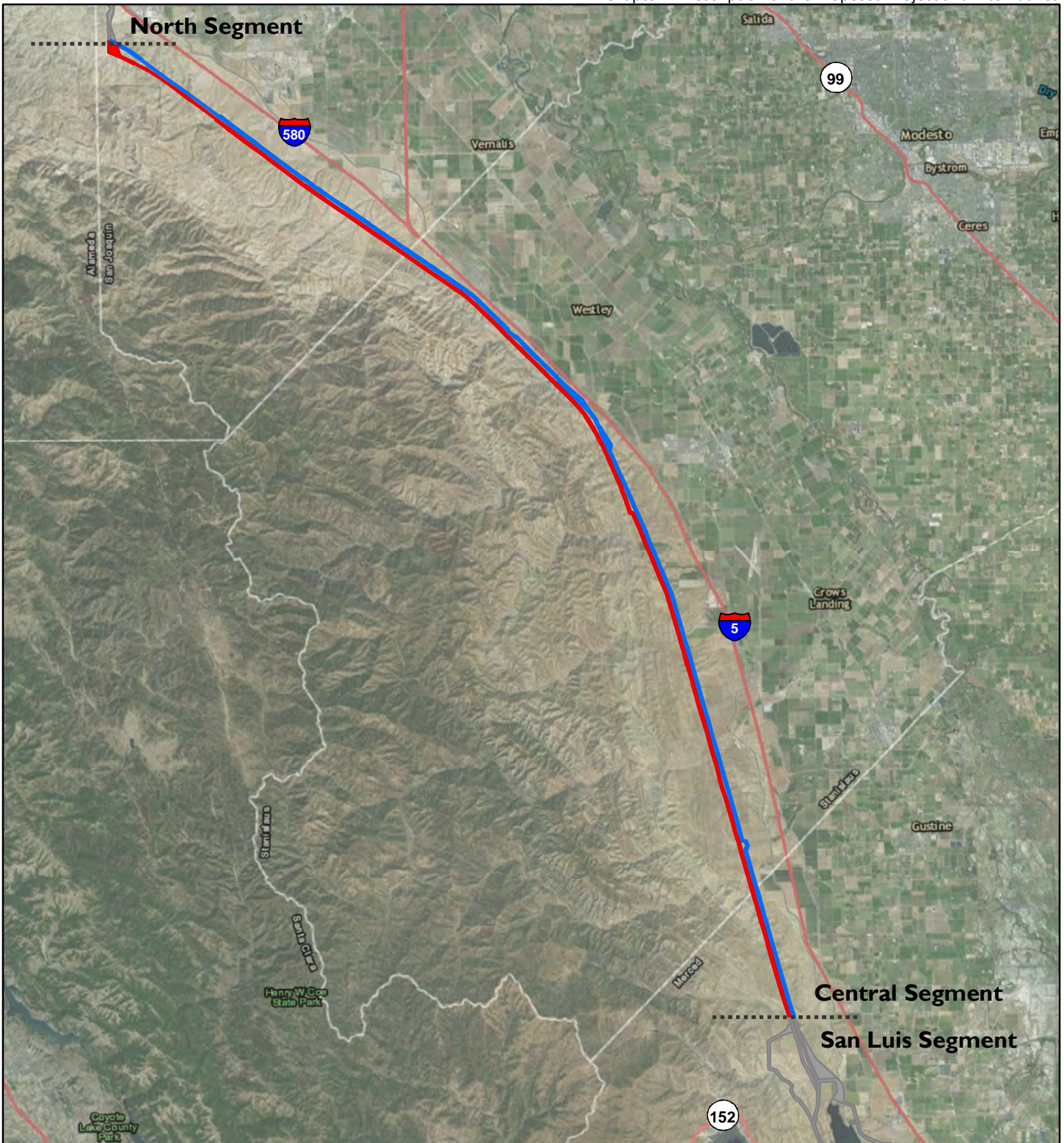
Source: WAPA SNR, Aspen EG, ESRI

- Proposed New Substations
- Existing Substations
- Tracy East Substation Area*
- Proposed Project Corridor
- Corridor Alternatives

* Proposed new Tracy East Substation would occupy up to 50 acres within this area

0 5 10
Miles





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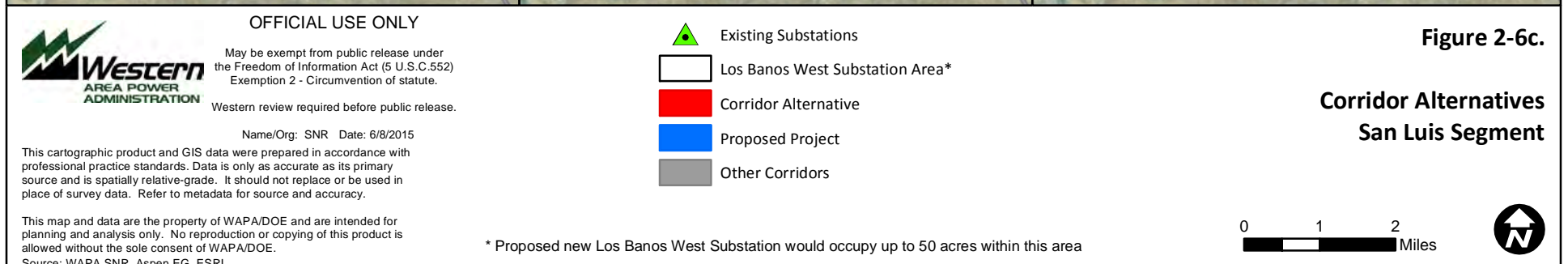
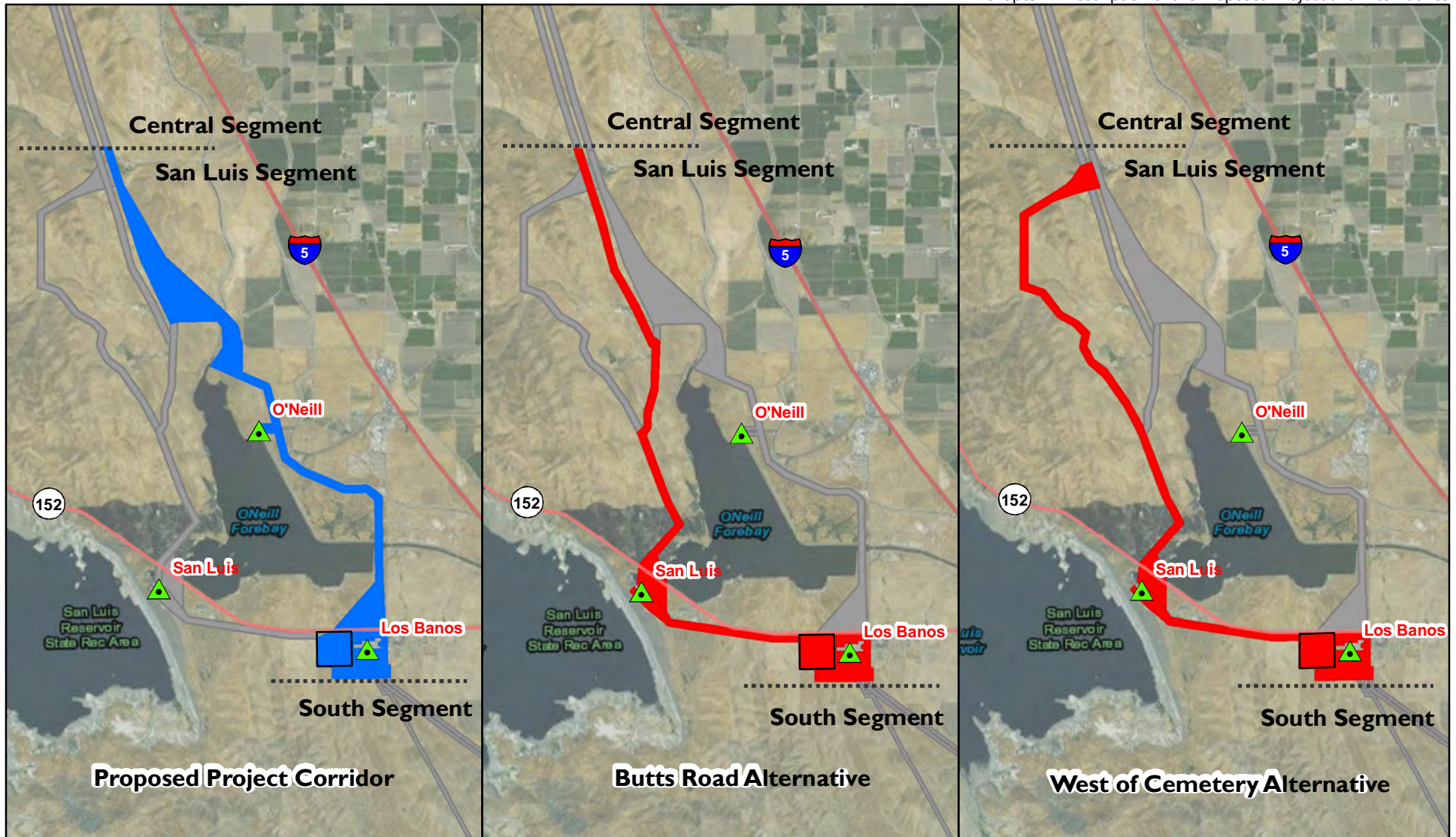
- Patterson Pass Road Alternative
- Proposed Project
- Other Corridors

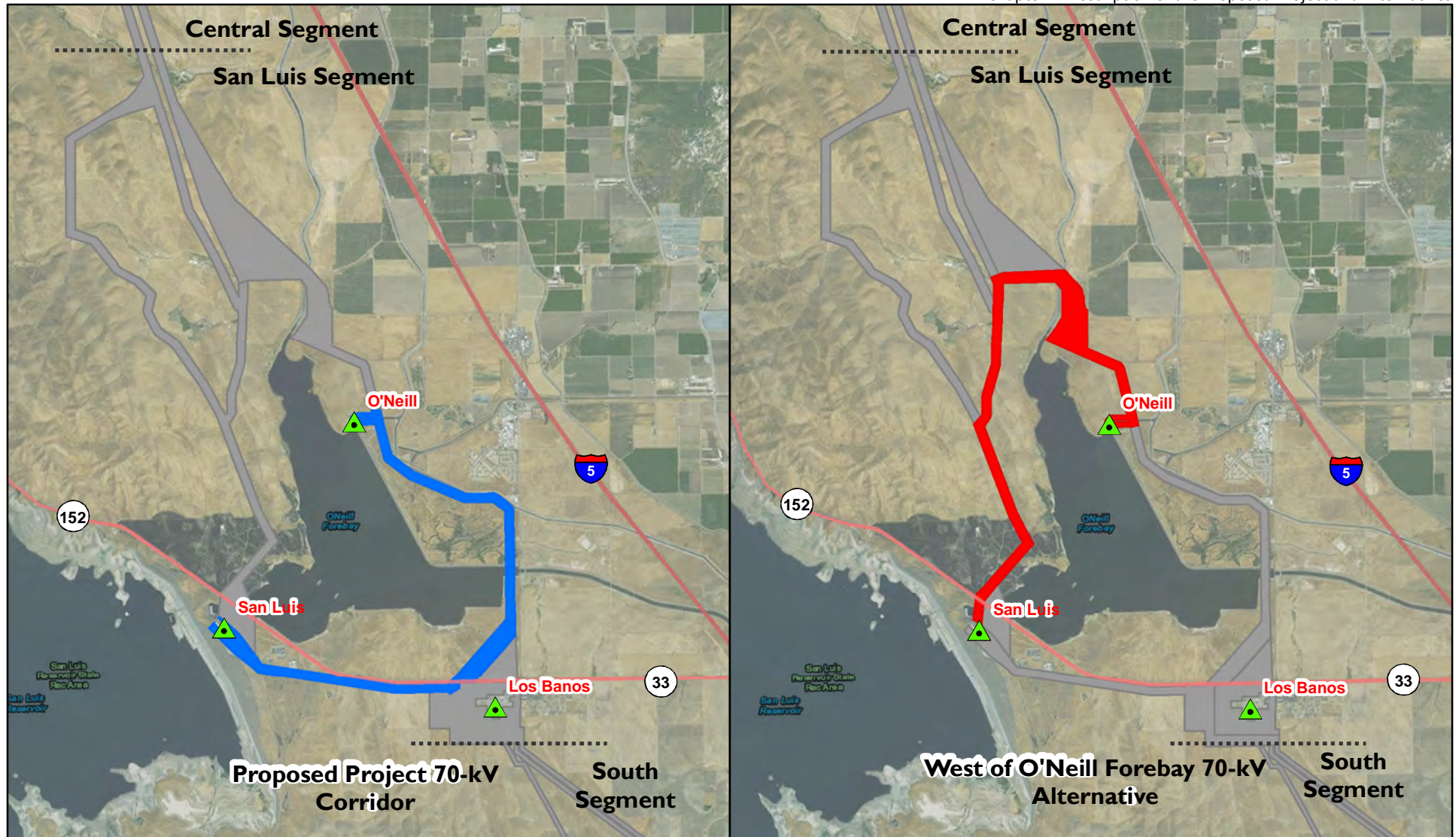
**Corridor Alternatives
Central Segment**

0 3 6 Miles



Figure 2-6b.





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Source: WAPA SNR, Aspen EG, ESRI





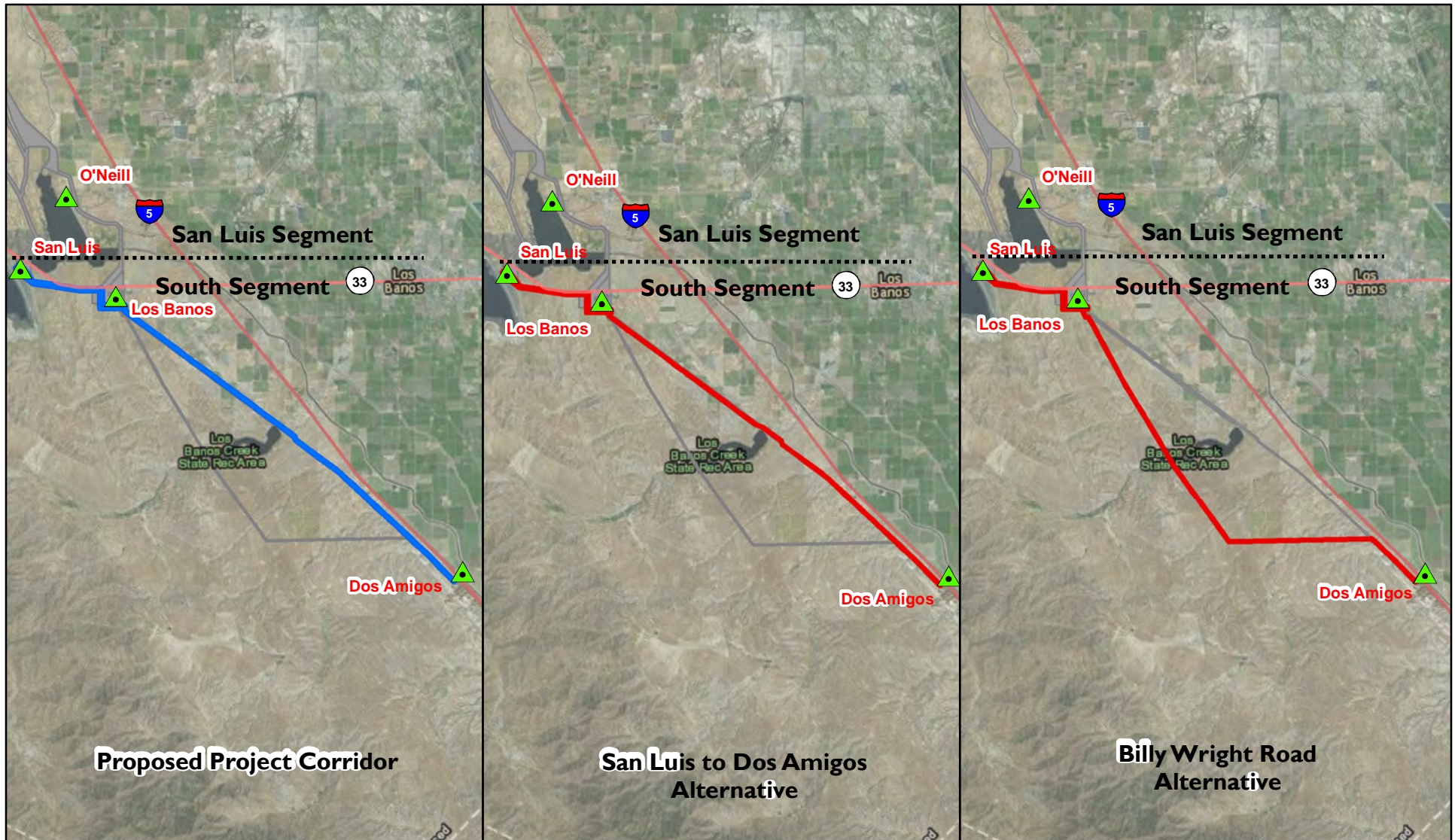
-  Existing Substations
-  Corridor Alternative
-  Proposed Project
-  Other Corridors

Figure 2-6d.

**70-kV Corridor Alternatives
San Luis Segment**

0 1 2 Miles





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Source: WAPA SNR, Aspen EG, ESRI

- Existing Substations
- Proposed Project
- Corridor Alternative
- Other Corridors

Figure 2-6e.

Corridor Alternatives
South Segment

0 2.5 5
Miles



2.2.1.5 San Luis to Dos Amigos Alternative

This alternative would start at San Luis Substation and would run parallel to SR 152 heading east for approximately 2.8 miles, using the same corridor as the tie-line, to a point near the Los Banos Substation; no interconnection with the Los Banos or the new Los Banos West Substations would occur. At this point, this alternative corridor would extend approximately 6 miles south along the western side of the existing high-voltage transmission lines. Just north of the Los Banos Creek Reservoir, this alternative would cross the existing high-voltage transmission lines and would join the Proposed Project corridor as it extends to the Dos Amigos Substation.

2.2.1.6 Billy Wright Road Alternative

This alternative would start at San Luis Substation and would run parallel to SR 152 heading east for approximately 2.8 miles, using the same corridor as the tie-line, to a point near the Los Banos Substation; no interconnection with the Los Banos or new Los Banos West Substations would occur. At this point, the alternative corridor would head south adjacent to and east of the existing PG&E 500-kV transmission lines for approximately 9 miles, before turning due east for approximately 4.5 miles to join the Proposed Project corridor as it extends to the Dos Amigos Substation.

2.2.2 Alternatives Considered and Eliminated

The alternatives listed in Table 2-7 were eliminated from consideration in the EIS/EIR. Detailed descriptions of these alternatives and the reasons for their elimination are presented in the ASR (Appendix A).

Table 2-7. Alternatives Considered and Eliminated

Alternative	Description
Mountain House Road 500-kV Corridor	Western developed this alternative to minimize the length of the Proposed Project and reduce impacts to houses in the Mountain House Developments. This alternative corridor would exit the Tracy Substation and extend due south for about 0.9 miles along Mountain House Road, then turn southeast for approximately 0.8 miles through agricultural fields before intersecting the Proposed Project at the existing transmission corridor. In comparison to the Proposed Project, however, it would result in greater agricultural and visual impacts and construction disturbance to nearby school and residents.
Grant Line Road 500-kV Corridor	Western developed this alternative corridor to minimize canal crossings. It would deviate from the Proposed Project and the existing transmission line corridor to remain along the east side of the Delta-Mendota Canal for about 0.7 miles. This short alternative segment would be about the same length as the Proposed Project. However, it would be about 0.25 miles closer to a new residential community along Grant Line Road in unincorporated Tracy, and therefore result in greater visual impacts.
Delta-Mendota Canal/Interstate 580 500-kV Corridor	Western developed this alternative in response to comments requesting an alternative that uses the corridor between the Delta-Mendota Canal and Interstate 580, to avoid houses west of the Proposed Project near Patterson Pass Road. The California Aqueduct runs down the center of this corridor, and therefore, more specifically, the route would be located between the California Aqueduct and Interstate 580. This alternative also avoids impacts to the Tracy Hills conservation easements located west of Interstate 580. This corridor would deviate from the Proposed Project just south of the California Aqueduct and would continue south for about 7.3 miles between the California Aqueduct and Interstate 580 until it turns southwest, across Interstate 580, to rejoin the Proposed Project. In comparison to the Proposed Project, it would reduce land use and biological resource impacts. However, this alternative would increase visual impacts in comparison to the Proposed Project as it would introduce new transmission infrastructure to an area previously without transmission lines. Furthermore, It would be technically infeasible as certain locations between the California Aqueduct and Interstate 580 are too narrow to allow for construction, operation, and maintenance of a transmission line.

Table 2-7. Alternatives Considered and Eliminated

Alternative	Description
East of Delta-Mendota Canal 500-kV Corridor	Western developed this alternative corridor to address public comments about the proximity of the Proposed Project to houses near Patterson Pass Road. It would provide another option to the Delta-Mendota Canal/Interstate 580 Alternative. It would deviate from the Proposed Project 0.1 miles south of Interstate 205 and continue southeast on the east side of the Delta-Mendota Canal for about 3 miles. It would then cross the California Aqueduct and extend southeast, traversing agricultural fields, between the Delta-Mendota Canal and the California Aqueduct for about 1.3 miles before crossing the California Aqueduct to join the Delta-Mendota Canal/Interstate 580 Alternative. In comparison to the Proposed Project, this alternative would potentially reduce land use and biological resource impacts, but would potentially increase visual and agricultural impacts. Furthermore, this alternative is technically infeasible as certain locations between the Delta-Mendota Canal and existing cell towers are too narrow to allow for construction, operation, and maintenance of a transmission line.
West of Cemetery 2 500-kV Corridor	Western developed this alternative corridor to avoid approved solar development and to reduce visual impacts to visitors of the San Joaquin National Cemetery. It would provide another option to the West of Cemetery Alternative that is further from the San Joaquin Valley National Cemetery. This alternative would extend south from the West of Cemetery Alternative Corridor at about 1.4 miles northeast of the Cemetery. This corridor would follow a valley, behind a ridge line, until it turns east to rejoin the West of Cemetery Alternative about 1 mile southeast of the Cemetery. In comparison to the Proposed Project, this alternative would reduce potential land use conflicts and visual impacts. However, due to the ruggedness of the terrain this alternative would potentially cause soil erosion and water quality impacts, and may be technically infeasible.
Forebay 500-kV Corridor	Western developed this alternative corridor to shorten the length of the Project and maximize use of existing transmission corridors. This alternative would provide another option to the West of O'Neill Forebay Alternative. This alternative would deviate from the West of O'Neill Forebay Alternative where that alternative turns southwest towards the San Luis Substation. This alternative would continue southeast following two existing PG&E 500-kV transmission lines across the southeastern portion of the O'Neill Forebay to the Los Banos Substation. A 0.7-mile segment of this alternative would cross the O'Neill Forebay in the existing transmission corridor. This alternative would maximize the use of existing transmission line easements. However, construction in the Forebay would result in potential water quality, soil erosion, and recreation impacts.
Jasper Sears Road Alternative	Western developed this alternative in response to scoping comments about potential land use conflicts of the Proposed Project with proposed solar development (Wright Solar Park), and current and proposed residential development (The Villages of Laguna San Luis), south of the Los Banos Substation. Scoping comments suggested an alternative alignment along Jasper Sears Road to minimize conflicts to The Villages of Laguna San Luis. This alternative corridor would exit the Los Banos Substation from the south and follow Jasper Sears Road and Western's existing 500-kV transmission line for about 9 miles before turning due east for about 5.3 miles to join the Proposed Project. This alternative would avoid proposed solar development; however, it would conflict with the planned Agua Fria development. It would result in more ground disturbance than the Proposed Project.

2.3 No Action/No Project Alternative

Under the No Action/No Project Alternative, construction of the San Luis Transmission Project would not occur. Western would arrange for transmission service for the San Luis Unit from the CAISO through the use of existing electric infrastructure. The estimated increase cost to Reclamation the first year by taking service under the CAISO Tariff is expected to be \$8 million. Reclamation's operating costs are paid by its water service contractors. Reclamation has studied and compared the total cost of CAISO service with the estimated costs of constructing, operating, and maintaining the SLTP over the life of the Project. The total estimated range of CAISO Tariff service costs to be incurred by the federal government for the Gianelli, O'Neill, and Dos Amigos facilities upon termination of the PG&E contract will range from

\$5,306,400 to \$8,767,600 per year beginning April 2016. The disparity in these costs is so great that reasonable prudence requires Reclamation and the Authority to pursue and evaluate the proposed SLTP. Refer to Section 1.2 for additional information on the economic analysis.

2.4 Comparison of Alternatives

This section identifies the environmentally preferred alternative (i.e., CEQA's environmentally superior alternative) and presents detailed information regarding its selection pursuant to the requirements of NEPA and CEQA.

2.4.1 Regulatory Requirements for Alternatives Comparison

National Environmental Policy Act

Under NEPA, the Draft EIS/EIR should identify the environmentally preferable or superior alternative from a range of alternatives considered if one exists at the draft stage. Commenters from other agencies and the public also are encouraged to address this question. However, in all situations, the environmentally preferable alternative must be identified in the Record of Decision on the Final EIS/EIR [Forty Questions No. 6(a) and 6(b)]. The answer to Forty Questions No. 6(a) states:

a. Section 1505.2(b) requires that, in cases where an EIS has been prepared, the Record of Decision (ROD) must identify all alternatives that were considered, "...specifying the alternative or alternatives which were considered to be environmentally preferable." The environmentally preferable alternative is the alternative that will promote the national environmental policy as expressed in NEPA's Section 101. Ordinarily, this means the alternative that causes the least damage to the biological and physical environment; it also means the alternative which best protects, preserves, and enhances historic, cultural, and natural resources.

The Council recognizes that the identification of the environmentally preferable alternative may involve difficult judgments, particularly when one environmental value must be balanced against another. The public and other agencies reviewing a Draft EIS can assist the lead agency to develop and determine environmentally preferable alternatives by providing their views in comments on the Draft EIS. Through the identification of the environmentally preferable alternative, the decision-maker is clearly faced with a choice between that alternative and others, and must consider whether the decision accords with the Congressionally declared policies of the Act.

California Environmental Quality Act

CEQA requires the following for alternatives analysis and comparison:

The EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the Proposed Project. A matrix displaying the major characteristics and significant environmental effects of each alternative may be used to summarize the comparison. If an alternative would cause one or more significant effects in addition to those that would be caused by the project as proposed, the significant effects of the alternative shall be discussed, but in less detail than the significant effects of the project as proposed. Guidelines Section 15126.6(d)

If the environmentally superior alternative is the No Project Alternative, CEQA requires identification of an environmentally superior action alternative among the other alternatives [CEQA Guidelines Section 15126.6(e)(2)]. In this EIS/EIR, the term "environmentally preferred alternative" is used to describe CEQA's environmentally superior alternative.

2.4.2 Alternatives Comparison Methods

To evaluate the various corridor alternatives, the Project area was divided into segments, as described in Section 2.2.1. The alternatives within each segment were compared to the analogous portion of the Proposed Project to identify the environmentally preferred corridor within each segment. The environmentally preferred corridor within the North, Central, San Luis and South segments were combined to comprise the Environmentally Preferred Action Alternative. Finally, the Environmentally Preferred Action Alternative was compared to the No Action Alternative to identify the Overall Environmentally Preferred Alternative.

Determining an environmentally preferred alternative requires balancing many environmental factors. In order to identify the environmentally preferred alternative, the most important impacts in each issue area were identified and compared in Tables 2-8 through 2-11. Each of these tables presents a preference ranking and a brief explanation of the ranking for each environmental issue area. Although this Draft EIS/EIR identifies an Environmentally Preferred Alternative, it is possible that the decision-makers could balance the importance of each impact area differently and reach different conclusions when identifying the Agency Preferred Alternative in the Final EIS/EIR.

2.4.3 Comparison Among Corridor Alternatives

For each area of the Proposed Project where an alternative is considered, the comparison begins with a summary of the significant impacts that cannot be mitigated. Significant and unavoidable impacts of the Proposed Project and any significant and unavoidable impacts either created or eliminated by each alternative are listed under each segment. Highlighting these areas of significant impacts identified which alternatives would be capable of eliminating significant unavoidable environmental effects of the Proposed Project, and which alternatives would create new significant impacts. This comparison helps identify the environmentally preferred alternative while considering all environmental resource areas.

2.4.3.1 Summary of Significant and Unavoidable Impacts

Noise

The Proposed Project and every alternative in every segment would result in similar significant and unavoidable noise impacts during construction activities (listed below). These impacts would be short-term (occurring intermittently for up to 1 to 2 weeks) at several isolated rural residences within approximately 500 feet of the Proposed Project and alternative corridors.

- **Impact NOISE-1.** Result in a substantial temporary or periodic increase in ambient noise levels (above 5 dBA Leq) at sensitive receptor locations above levels existing without the Project.
- **Impact NOISE-3.** Result in noise levels that exceed local or federal noise regulations or guidelines.

Neither the Proposed Project nor any alternatives would result in significant and unavoidable impacts for resource areas other than noise within the North, Central, or South segments.

Significant and unavoidable impacts have been identified for Visual Resources (West of Cemetery Alternative only), Recreation (Proposed Project and alternatives), and Land Use (Proposed Project and alternatives) in the San Luis Segment, as described below.

Visual Resources

The Proposed Project would not result in significant and unavoidable impacts to visual resources in the San Luis Segment. However, the West of Cemetery Alternative would be prominently visible from a scenic overlook at the San Joaquin Valley National Cemetery, thereby resulting in the following significant and unavoidable impacts to Visual Resources:

- **Impact VIS-1.** Cause degradation of the foreground character or scenic quality of a visually important landscape.
- **Impact VIS-2.** Introduce dominant visual changes in the landscape that are seen by highly sensitive viewer locations such as community enhancement areas or locations with special scenic, historic, recreational, cultural, and/or natural qualities that have been recognized as such through legislation or some other official declaration.
- **Impact VIS-3.** Cause visual interruption that would dominate a unique viewshed or scenic view.

Recreation

The Proposed Project in the San Luis Segment would include construction of the new Los Banos West Substation, which would occupy up to 50 acres within the 150-acre Jasper Sears OHV Use Area. This would result in the following significant and unavoidable impacts to Recreation:

- **Impact REC-1.** Conflict with established, designated, or planned recreation areas or activities.
- **Impact REC-2.** Result in changes that alter or otherwise physically affect established, designated, or planned recreation areas or activities.
- **Impact REC-3.** Decrease accessibility to areas established, designated, or planned for recreation.

Each San Luis Segment alternative corridor would interconnect with the new Los Banos West Substation, thereby resulting in the same significant and unavoidable impacts as the Proposed Project.

Land Use

The Proposed Project in the San Luis Segment would include construction of the new Los Banos West Substation, which would occupy up to 50 acres within the 150-acre Jasper Sears OHV Use Area. This would result in the following significant and unavoidable impacts to Land Use:

- **Impact LU-1.** Conflict with applicable land use plans, policies, goals, or regulations.
- **Impact LU-4.** Conflict with state or federally established, designated or reasonably foreseeable planned special use areas (e.g., recreation, wildlife management area, game management areas, waterfowl production areas, scientific and natural areas, wilderness areas, areas of critical environmental concern, etc.).

Each San Luis Segment alternative corridor would interconnect with the new Los Banos West Substation, thereby resulting in the same significant and unavoidable impacts as the Proposed Project.

2.4.3.2 Alternatives Comparison

Tables 2-8 through 2-11 present a comparison of the Proposed Project and corridor alternatives in consideration of the most important impacts for every issue area within each corridor segment. The information in these tables is based on the conclusions presented in Chapter 4. Refer to the specific resource area analyses in Chapter 4 for additional information on affected resources, impact assessment methods, or the impacts.

North Segment (500-kV)

There are no alternatives to the Proposed Project in the North Segment. Therefore, the Proposed Project would be the environmentally preferred corridor.

Central Segment (500-kV)

In the Central Segment, the Patterson Pass Alternative would be the environmentally preferred corridor. The Proposed Project is approximately 1,000 feet closer to residences in this segment than the alternative Patterson Pass Alternative corridor, and therefore, the Proposed Project would result in greater noise and visual resources impacts (refer to Table 2-8). Agriculture impacts would also be slightly greater than the Patterson Pass Alternative corridor. The Patterson Pass Road Alternative would result in greater impacts to biological resources than the Proposed Project.

Table 2-8. Comparison of the Proposed Project to Alternatives: Central Segment

Issue Area	Proposed Project	Patterson Pass Alternative
Agriculture	<ul style="list-style-type: none"> ▪ Rank = 2 ▪ Permanent farmland impacts: 51.5 acres¹ ▪ Temporary farmland impacts: 34.8 acres 	<ul style="list-style-type: none"> ▪ Preferred ▪ Permanent farmland impacts: 46.9 acres ▪ Temporary farmland impacts: 29.3 acres
Air Quality and Climate Change	<ul style="list-style-type: none"> ▪ No preference² 	<ul style="list-style-type: none"> ▪ No preference
Biological Resources	<ul style="list-style-type: none"> ▪ Preferred ▪ Impacts fewer special-status plants ▪ Impacts more ephemeral creeks, freshwater marsh, and vernal pools 	<ul style="list-style-type: none"> ▪ Rank = 2 ▪ Impacts more special-status plants ▪ Impacts more wildflower fields, Great Valley riparian forest, intermittent creeks, and seasonal wetlands
Cultural Resources and Native American Consultation	<ul style="list-style-type: none"> ▪ No preference 	<ul style="list-style-type: none"> ▪ No preference
Environmental Justice	<ul style="list-style-type: none"> ▪ No preference 	<ul style="list-style-type: none"> ▪ No preference
Geology, Minerals, and Soils	<ul style="list-style-type: none"> ▪ No preference 	<ul style="list-style-type: none"> ▪ No preference
Land Use	<ul style="list-style-type: none"> ▪ No preference 	<ul style="list-style-type: none"> ▪ No preference
Noise	<ul style="list-style-type: none"> ▪ Rank = 2 ▪ Closer to residences 	<ul style="list-style-type: none"> ▪ Preferred ▪ Farther from residences
Paleontological Resources	<ul style="list-style-type: none"> ▪ No preference 	<ul style="list-style-type: none"> ▪ No preference
Public Health and Safety	<ul style="list-style-type: none"> ▪ No preference 	<ul style="list-style-type: none"> ▪ No preference
Recreation	<ul style="list-style-type: none"> ▪ No preference 	<ul style="list-style-type: none"> ▪ No preference
Socioeconomics	<ul style="list-style-type: none"> ▪ No preference 	<ul style="list-style-type: none"> ▪ No preference
Traffic and Transportation	<ul style="list-style-type: none"> ▪ No preference 	<ul style="list-style-type: none"> ▪ No preference
Visual Resources	<ul style="list-style-type: none"> ▪ Rank = 2 ▪ Closer to residences 	<ul style="list-style-type: none"> ▪ Preferred ▪ Farther from residences and scenic highway (I-5)
Water Resources and Floodplains	<ul style="list-style-type: none"> ▪ No preference 	<ul style="list-style-type: none"> ▪ No preference

1 - Farmland impacts are the sum of acreage potentially impacted within the Project study area and the Project corridor.

2 - No preference = impacts are similar or with negligible differences in intensity

San Luis Segment (500-kV)

In the San Luis Segment (500-kV), the Proposed Project would be the environmentally preferred corridor. The Proposed Project is the shortest route with the least ground disturbance. Therefore, it would result in fewer impacts to air quality, geology, paleontological resources and water resources. The Proposed Project is furthest from the San Joaquin Valley National Cemetery, and therefore, would avoid noise and visual impacts to this sensitive resource. Additionally, it would impact the least amount of habitat for the federally and state endangered and state fully protected blunt-nosed leopard lizard.

Table 2-9. Comparison of the Proposed Project to Alternatives: San Luis Segment (500-kV)

Issue Area	Proposed Project	Butts Road Alternative	West of Cemetery Alternative
Agriculture	<ul style="list-style-type: none"> Rank = 2 Permanent farmland impacts: 17.6 acres¹ Temporary farmland impacts: 7.2 acres 	<ul style="list-style-type: none"> Preferred Permanent farmland impacts: 12.5 acres Temporary farmland impacts: 4.6 acres 	<ul style="list-style-type: none"> Rank=3 Permanent farmland impacts: 19.8 acres Temporary farmland impacts: 3.6 acres
Air Quality and Climate Change	<ul style="list-style-type: none"> Preferred Least emissions and dust Shortest route requiring the use of construction equipment for the shortest duration 	<ul style="list-style-type: none"> Rank = 2 More emissions and dust than the Proposed Project Longer route than the Proposed Project requiring the use of construction equipment for longer duration 	<ul style="list-style-type: none"> Rank = 3 Most emissions and dust Longest route requiring the use of construction equipment for the longest duration
Biological Resources	<ul style="list-style-type: none"> Preferred Least impacts to blunt-nosed leopard lizard habitat (federally endangered, state endangered, state fully protected) Most impacts to sensitive plant communities and jurisdictional resources Crosses two conservation easements 	<ul style="list-style-type: none"> Rank = 2 Greater impacts to blunt-nosed leopard lizard habitat Least impacts to sensitive plant communities and jurisdictional resources Crosses one conservation easement 	<ul style="list-style-type: none"> Rank = 3 Greater impacts to blunt-nosed leopard lizard habitat Less impacts to sensitive plant communities and jurisdictional resources Crosses one conservation easement
Cultural Resources and Native American Consultation	<ul style="list-style-type: none"> No preference 	<ul style="list-style-type: none"> No preference 	<ul style="list-style-type: none"> No preference
Environmental Justice	<ul style="list-style-type: none"> No preference 	<ul style="list-style-type: none"> No preference 	<ul style="list-style-type: none"> No preference
Geology, Minerals, and Soils	<ul style="list-style-type: none"> Preferred Shortest route would result in the least soil disturbance 	<ul style="list-style-type: none"> Rank = 2 Longer route would result in more soil disturbance than the Proposed Project 	<ul style="list-style-type: none"> Rank = 3 Longest route would result in the most soil disturbance Steeper terrain would increase the potential for erosion and landslide
Land Use	<ul style="list-style-type: none"> Rank = 2/No preference Impacts are the same as the Butts Road Alternative 	<ul style="list-style-type: none"> Rank = 2/No preference Impacts are the same as the Proposed Project 	<ul style="list-style-type: none"> Preferred Would avoid residences, recreation areas, and wildlife preserve lands
Noise	<ul style="list-style-type: none"> Preferred Would expose the fewest sensitive receptors (residences, recreation areas) to construction noise 	<ul style="list-style-type: none"> Rank = 2 Would expose more sensitive receptors (residences, recreation areas, San Joaquin Valley National Cemetery) to construction noise 	<ul style="list-style-type: none"> Rank = 3 Would expose more sensitive receptors to construction noise Closest to San Joaquin Valley National Cemetery
Paleontological Resources	<ul style="list-style-type: none"> Preferred Would require the least ground disturbance, and therefore, has the lowest potential for impacts to paleontological resources 	<ul style="list-style-type: none"> Rank = 2 Would require more ground disturbance, and therefore, has higher potential for impacts to paleontological resources than the Proposed Project 	<ul style="list-style-type: none"> Rank = 3 Would require the most ground disturbance, and therefore, has the highest potential for impacts to paleontological resources

Table 2-9. Comparison of the Proposed Project to Alternatives: San Luis Segment (500-kV)

Issue Area	Proposed Project	Butts Road Alternative	West of Cemetery Alternative
Public Health and Safety	▪ No preference	▪ No preference	▪ No preference
Recreation	▪ Preferred	▪ Rank = 2/no preference ▪ Would overlap a greater portion of the Lower Cottonwood Creek Wildlife Area and the San Luis Reservoir State Recreation Area in comparison to the Proposed Project	▪ Rank = 2/no preference ▪ Impacts to recreation are the same as Butts Road Alternative
Socioeconomics	▪ No preference	▪ No preference	▪ No preference
Traffic and Transportation	▪ No preference	▪ No preference	▪ No preference
Visual Resources	▪ Preferred	▪ Rank = 2 ▪ Would be more visible (closer) to the San Joaquin Valley National Cemetery and to recreation areas on the west side of the O'Neill Forebay than the Proposed Project	▪ Rank = 3 ▪ Would result in a significant and unavoidable (Class I) impact to viewers at the San Joaquin Valley National Cemetery & residences in this area
Water Resources and Floodplains	▪ Preferred	▪ Rank = 2 ▪ Longer route would result in more soil disturbance than the Proposed Project	▪ Rank = 3 ▪ Longest route would result in most soil disturbance ▪ Steeper terrain would increase the potential for erosion and potentially result in greater impacts to water quality

1 - Farmland impacts are the sum of acreage potentially impacted within the Project study area and the Project corridor.

San Luis Segment (70-kV)

In the San Luis Segment (70-kV), the Proposed Project would be the environmentally preferred corridor. The Proposed Project and alternative are the same length, have the same length of new access roads, and have the same number of support structures. Therefore, impacts are similar and there is no preference between corridors for most issue areas. However, the Proposed Project would result in fewer impacts to habitat for federally and state-listed species including San Joaquin kit fox, California tiger salamander, and blunt-nosed leopard lizard. Additionally, the Proposed Project would be further from the San Joaquin Valley National Cemetery, thereby resulting in fewer land use, noise, and visual resources impacts than the West of O'Neill Forebay 70-kV Alternative.

Table 2-10. Comparison of the Proposed Project to Alternatives: San Luis Segment (70-kV)

Issue Area	Proposed Project	West of O'Neill Forebay 70-kV Alternative
Agriculture	▪ No preference ▪ Permanent farmland impacts: 0.3 acre ¹ ▪ Temporary farmland impacts: 3.3 acres	▪ No preference ▪ Permanent farmland impacts: 0.3 acre ▪ Temporary farmland impacts: 8.0 acres
Air Quality and Climate Change	▪ No preference	▪ No preference

Table 2-10. Comparison of the Proposed Project to Alternatives: San Luis Segment (70-kV)

Issue Area	Proposed Project	West of O'Neill Forebay 70-kV Alternative
Biological Resources	<ul style="list-style-type: none"> ▪ Preferred ▪ Fewer impacts to habitat for federally and state-listed species including San Joaquin kit fox, California tiger salamander, and blunt-nosed leopard lizard ▪ Fewer impacts to non-native grassland, seasonal wetland, and northern claypan vernal pool habitat ▪ Greater impacts to Great Valley cottonwood riparian forest and coastal and valley freshwater marsh habitat ▪ Would be located in the O'Neill Forebay Wildlife Area ▪ Not likely to cross conservation easements 	<ul style="list-style-type: none"> ▪ Rank = 2 ▪ Greater impacts to habitat for federally and state-listed species including San Joaquin kit fox, California tiger salamander, and blunt-nosed leopard lizard ▪ Greater impacts to non-native grassland, seasonal wetland, and northern claypan vernal pool habitat ▪ Fewer impacts to Great Valley cottonwood riparian forest and coastal and valley freshwater marsh habitat ▪ Would be located in the Lower Cottonwood Creek Wildlife Area ▪ Crosses two conservation easements
Cultural Resources and Native American Consultation	<ul style="list-style-type: none"> ▪ No preference 	<ul style="list-style-type: none"> ▪ No preference
Environmental Justice	<ul style="list-style-type: none"> ▪ No preference 	<ul style="list-style-type: none"> ▪ No preference
Geology, Minerals, and Soils	<ul style="list-style-type: none"> ▪ No preference 	<ul style="list-style-type: none"> ▪ No preference
Land Use	<ul style="list-style-type: none"> ▪ Preferred ▪ Would encroach into the Village of Santa Nella and the O'Neill Forebay Wildlife Area 	<ul style="list-style-type: none"> ▪ Rank = 2 ▪ Would encroach into recreation areas and the San Joaquin Valley National Cemetery
Noise	<ul style="list-style-type: none"> ▪ Preferred 	<ul style="list-style-type: none"> ▪ Rank = 2 ▪ Would be closer to, and therefore result in, greater exposure of sensitive receptors (San Luis Reservoir State Recreation Area, San Joaquin Valley National Cemetery) to construction noise
Paleontological Resources	<ul style="list-style-type: none"> ▪ No preference 	<ul style="list-style-type: none"> ▪ No preference
Public Health and Safety	<ul style="list-style-type: none"> ▪ No preference 	<ul style="list-style-type: none"> ▪ No preference
Recreation	<ul style="list-style-type: none"> ▪ Preferred 	<ul style="list-style-type: none"> ▪ Rank = 2 ▪ Would overlap a greater portion of the Lower Cottonwood Creek Wildlife Area and the San Luis Reservoir State Recreation Area
Socioeconomics	<ul style="list-style-type: none"> ▪ No preference 	<ul style="list-style-type: none"> ▪ No preference
Traffic and Transportation	<ul style="list-style-type: none"> ▪ No preference 	<ul style="list-style-type: none"> ▪ No preference
Visual Resources	<ul style="list-style-type: none"> ▪ Preferred 	<ul style="list-style-type: none"> ▪ Rank = 2 ▪ Would be more visible (closer) to the San Joaquin Valley National Cemetery and to recreation areas on the west side of the O'Neill Forebay
Water Resources and Floodplains	<ul style="list-style-type: none"> ▪ No preference 	<ul style="list-style-type: none"> ▪ No preference

1 - Farmland impacts are the sum of acreage potentially impacted within the Project study area and the Project corridor.

South Segment

In the South Segment, the San Luis to Dos Amigos Alternative would be the environmentally preferred corridor. The Proposed Project and the San Luis to Dos Amigos Alternative are adjacent, have the same length of easements and new access roads, and have the same number of support structures. Therefore, impacts are similar and there is no preference between corridors for most issue areas. However, the San Luis to Dos Amigos Alternative would have slightly fewer impacts to agricultural land. It would also be further from more residences than the Proposed Project, thereby resulting in less construction noise impacts.

The Billy Wright Road Alternative would be the least environmentally preferred alternative in this segment because it is the longest and would result in the most ground disturbance. Additionally, it would cross the Path of the Padres Trail, resulting in greater recreation impacts than the Proposed Project or the San Luis to Dos Amigos Alternative.

Table 2-11. Comparison of the Proposed Project to Alternatives: South Segment

Issue Area	Proposed Project	San Luis to Dos Amigos Alternative	Billy Wright Road Alternative
Agriculture	<ul style="list-style-type: none"> Rank = 3 Permanent farmland impacts: 31.2 acres¹ Temporary farmland impacts: 20.6 acres 	<ul style="list-style-type: none"> Preferred Permanent farmland impacts: 13.4 acres Temporary farmland impacts: 18.3 acres 	<ul style="list-style-type: none"> Rank=2 Permanent farmland impacts: 19.1 acres Temporary farmland impacts: 8.2 acres
Air Quality and Climate Change	<ul style="list-style-type: none"> Preferred/no preference 	<ul style="list-style-type: none"> Preferred/no preference Impacts are the same as the Proposed Project 	<ul style="list-style-type: none"> Preferred/no preference Impacts are the same as the Proposed Project
Biological Resources	<ul style="list-style-type: none"> Preferred/no preference 	<ul style="list-style-type: none"> Preferred/no preference Impacts are the same as the Proposed Project 	<ul style="list-style-type: none"> Rank = 2 Greater impacts to blunt-nosed leopard lizard habitat Greater impacts to jurisdictional resources
Cultural Resources and Native American Consultation	<ul style="list-style-type: none"> No preference 	<ul style="list-style-type: none"> No preference 	<ul style="list-style-type: none"> No preference
Environmental Justice	<ul style="list-style-type: none"> No preference 	<ul style="list-style-type: none"> No preference 	<ul style="list-style-type: none"> No preference
Geology, Minerals, and Soils	<ul style="list-style-type: none"> Preferred/no preference 	<ul style="list-style-type: none"> Preferred/no preference Impacts are the same as the Proposed Project 	<ul style="list-style-type: none"> Rank = 2 Longer route would result in more soil disturbance than the Proposed Project
Land Use	<ul style="list-style-type: none"> No preference 	<ul style="list-style-type: none"> No preference 	<ul style="list-style-type: none"> No preference
Noise	<ul style="list-style-type: none"> Rank = 3 Would result in noise impacts to the most residences 	<ul style="list-style-type: none"> Rank = 2 Would reduce noise impacts for 2-3 residences and increase impacts at one residence in comparison to the Proposed Project 	<ul style="list-style-type: none"> Preferred/no preference
Paleontological Resources	<ul style="list-style-type: none"> Preferred/no preference 	<ul style="list-style-type: none"> Preferred/no preference Impacts are the same as the Proposed Project 	<ul style="list-style-type: none"> Preferred/no preference Impacts are the same as the Proposed Project
Public Health and Safety	<ul style="list-style-type: none"> No preference 	<ul style="list-style-type: none"> No preference 	<ul style="list-style-type: none"> No preference
Recreation	<ul style="list-style-type: none"> Preferred/no preference 	<ul style="list-style-type: none"> Preferred/no preference Impacts are the same as the Proposed Project 	<ul style="list-style-type: none"> Rank=2 Overlaps the Path of the Padres Trail and a greater portion of the Los Banos Creek Reservoir
Socioeconomics	<ul style="list-style-type: none"> No preference 	<ul style="list-style-type: none"> No preference 	<ul style="list-style-type: none"> No preference
Traffic and Transportation	<ul style="list-style-type: none"> No preference 	<ul style="list-style-type: none"> No preference 	<ul style="list-style-type: none"> No preference

Table 2-11. Comparison of the Proposed Project to Alternatives: South Segment

Issue Area	Proposed Project	San Luis to Dos Amigos Alternative	Billy Wright Road Alternative
Visual Resources	▪ Preferred /no preference	▪ Preferred /no preference ▪ Impacts are the same as the Proposed Project	▪ Rank = 2 ▪ 8 more structures, 4 more acres of land disturbed
Water Resources and Floodplains	▪ Preferred /no preference	▪ Preferred /no preference ▪ Impacts are the same as the Proposed Project	▪ Rank = 2 ▪ Longer route would result in more soil disturbance than the Proposed Project

1 - Farmland impacts are the sum of acreage potentially impacted within the Project study area and the Project corridor.

Conclusion

Based on the conclusions of Chapter 4, as summarized in Tables 2-8 through 2-11 above, the **Environmentally Preferred Corridor Alternative** is composed of (refer to Figure 2-7):

- North Segment – Preferred Corridor
- Central Segment – Patterson Pass Road Alternative
- San Luis Segment (500-kV) – Preferred Corridor
- San Luis Segment (70-kV) – Preferred Corridor
- South Segment – San Luis to Dos Amigos Alternative

2.4.4 Environmentally Preferred Corridor Alternative vs. No Action/No Project Alternative

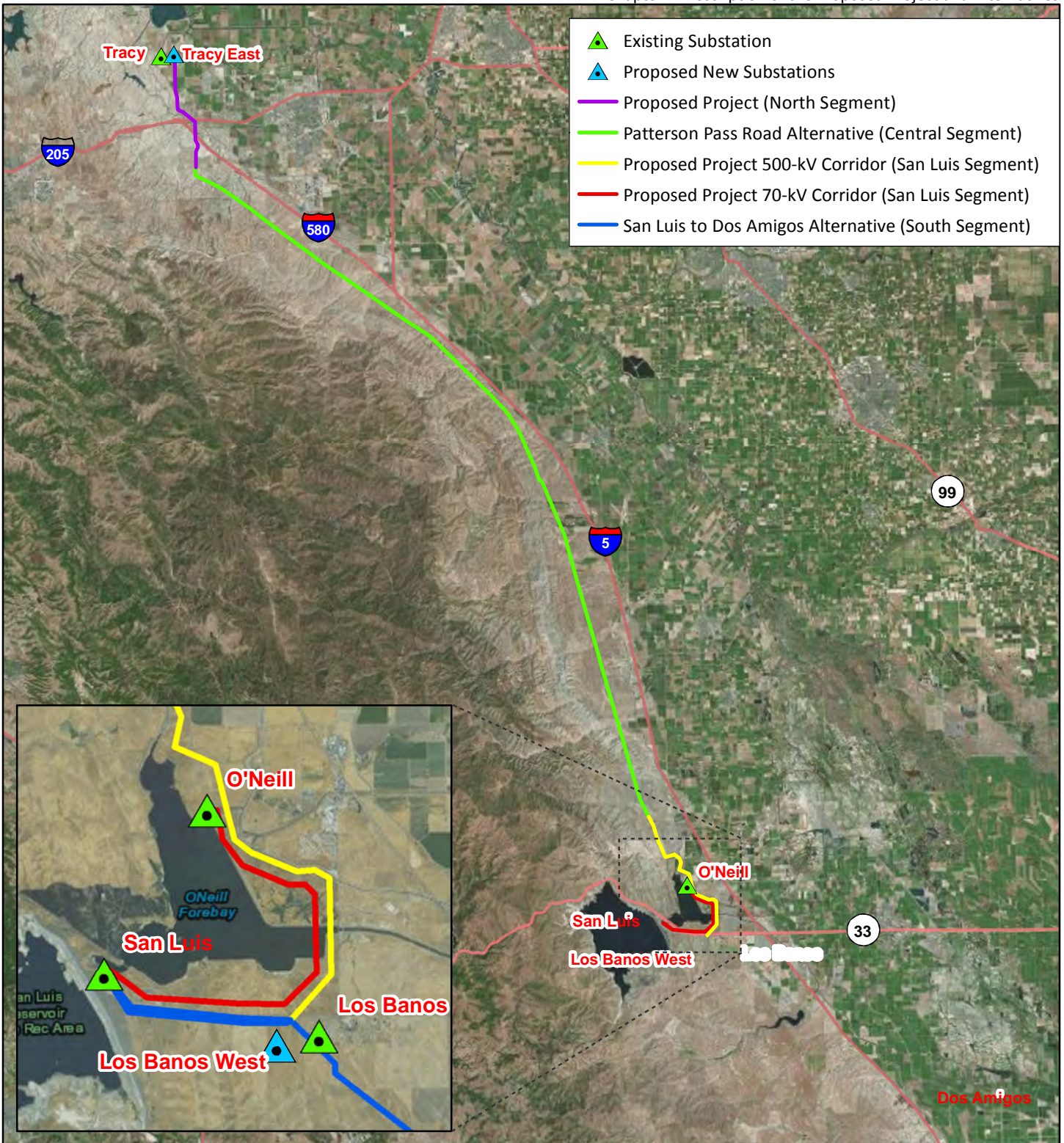
Under the No Action/No Project Alternative, construction of the San Luis Transmission Project would not occur. Western would arrange for transmission service for the San Luis Unit from the CAISO using existing electric infrastructure.

As there would be no new adverse direct environmental impacts under this alternative, it would be preferable to the Environmentally Preferred Corridor Alternative. Therefore, the No Action/No Project Alternative is the **Environmentally Preferred Alternative**.

As detailed in Section 1.2, Reclamation's estimated transmission costs under the No Action/No Project Alternative (i.e., the CAISO Tariff) would be so expensive as to render this alternative infeasible. Further, the No Action/No Project Alternative is considered infeasible because it would not achieve the purpose and need or basic project objectives.

2.4.5 Environmentally Preferred Action Alternative

If the environmentally preferred alternative is the No Action/No Project Alternative, CEQA requires identification of an environmentally preferred action alternative among the other alternatives. The **Environmentally Preferred Action Alternative** is the Environmentally Preferred Corridor Alternative as described in Section 2.4.4 and illustrated in Figure 2-7.



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Figure 2-7

Environmentally Preferred
Corridor Alternative

0 5 10
Miles



Chapter 3 Affected Environment

3.1 Introduction

This chapter describes the existing conditions in the Project study area at the time of NOI and NOP publication. At this time, the exact locations and quantities of Project components (e.g., access roads, staging areas, pulling sites) are unknown and, in some cases, quantities of Project components are conservatively estimated (see Appendix E). To provide flexibility in siting Project components, particularly access roads that may extend outside of the proposed ROW, a one-mile buffer was added on the west side of the Proposed Project and alternative corridors. The buffer was extended up to I-5 on the east side of the Proposed Project and alternative corridors, except where the Project would be located east of I-5 near the Dos Amigos Substation. The affected environment sections below describe the resources within this buffer, which is referred to as the *study area*, unless otherwise defined for a specific resource. This EIS/EIR uses the term *Project area* to collectively describe the area within which Project components (transmission lines, access roads, and temporary construction areas) could be located. A *corridor* is a linear area within which the easements would be located; proposed corridors are part of the Project area.

3.1.1 Resources Considered and Eliminated

Through internal and external scoping, Western and the Authority identified a number of issues of concern, which are evaluated in detail in Sections 3.2 through 3.16. Certain issue areas, presented below, were not further evaluated because they are not present in the study area or no measurable impacts would occur.

Utilities and Service Systems

The Proposed Project would not create significant adverse demands on local water, sanitary sewer, electricity, or natural gas systems. Water requirements for construction would be negligible. Given the number of workers and temporary duration of construction, there are no potentially significant impacts on local water, sewer systems, and electric service systems and the Project would not change the ability of the water and electricity suppliers to serve area demands. Therefore, utilities and service systems are not further evaluated.

Public Services

The temporary influx of construction personnel would not substantially increase demands on schools or hospitals, or lower the level of service for fire protection or police protection, nor would it require the construction or expansion of facilities or services. There are no potentially significant impacts to public services associated with the Project; therefore, they are not further evaluated.

3.2 Agriculture

3.2.1 Proposed Project

3.2.1.1 Affected Environment

The information used to describe the existing conditions was compiled primarily from maps and information published by the California Department of Conservation (DOC), U.S. Department of Agriculture (USDA) – National Agricultural Statistics Service (NASS), and the California Department of Finance.

In this section, agricultural resources are described within the Project study area as defined in Section 3.1. Quantitative data is provided for both the study area and the corridors to facilitate the impact analysis in Section 4.2 (Agriculture).

Overview

The Proposed Project lies entirely within the San Joaquin Valley (Valley), which is California's top agricultural producing region, growing more than 250 unique crops. California is the nation's leading dairy state, with three-quarters of its dairy cows located in the Valley. The annual gross value of agricultural production in the Valley is more than \$25 billion (EPA, 2014).

The Proposed Project crosses large portions of San Joaquin, Stanislaus, and Merced counties. These counties are ranked fifth, sixth, and seventh highest counties in total value of production within the State of California, respectively (CDFA, 2013). Eastern Alameda County is not typically a highly productive agriculture region with the exception of the area along the northeastern edge of the county, which is traversed by the Proposed Project. This portion of Alameda County is part of the San Joaquin Valley, and therefore, is more similar in terms of agriculture land use and characteristics to San Joaquin County than to the remainder of Alameda County.

Table 3.2-1 shows the total number of farms, amount of land in farms, average size of farms, and total harvested cropland for each county traversed by the Proposed Project based on the California Department of Finance Statistical Abstract (2009).

Table 3.2-1. Number, Land Area, Average Size and Harvested Crops of Farms by County

County	Number of Farms	Land in Farms (acres)	Average Size of Farms (acres)	Harvested Cropland (acres)
Alameda	424	218,094	514	7,926
San Joaquin	4,026	812,629	202	517,267
Stanislaus	4,267	789,853	185	347,750
Merced	2,964	1,006,127	339	479,156
Total of Counties (subtotal)	11,681	2,826,703	310	1,352,099
State	79,631	27,589,027	346	8,466,321

Source: California Department of Finance, Statistical Abstract, 2009

As shown, Stanislaus County had the greatest number of farms (4,267), Merced County had the greatest amount of land in farms (1,006,127 acres), and San Joaquin County had the greatest amount of harvested cropland (517,267 acres). Alameda County had the smallest number of farms (424), amount of land in farms (218,094 acres), and amount of harvested cropland (7,926 acres); however, it did have the largest average size of farms (514 acres). In total, all four counties contained 11,681 farms, which represents over 14 percent of the statewide total and the average farm size is slightly less than the statewide average. The total harvested cropland within the four counties was over 1.3 million acres, which represented over 15 percent of the total harvested cropland in the state.

Characteristics

Table 3.2-2 presents the primary cropland classification types (and total acres), as defined by the USDA NASS, of agricultural land within the study area. Grassland/Pasture is the largest single crop group grown in the study area (by acres), covering nearly 4,500 acres and accounting for about four percent of total farmland in the study area, followed by Other Hay/Non Alfalfa, Winter Wheat, and Alfalfa.

The Farmland Mapping and Monitoring Program (FMMP) is a non-regulatory program administered by the California Department of Conservation, which provides an on-going data set of agricultural land use and land use changes throughout California. The FMMP classifies land into a range of agricultural land use categories based on technical soil ratings and current land use. Important Farmland consists of four farmland designations: Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance. Table 3.2-3 defines these farmland categories and Table 3.2-4 provides for each category the number of acres and percent of the total area within the study area and the Proposed Project corridor respectively.

Table 3.2-2. Cropland Classification Types within the Study Area

Cropland Classification	Study Area (Acres)
Grassland/Pasture	4494.09
Other Hay/Non Alfalfa	236.41
Winter Wheat	224.65
Alfalfa	132.21
Fallow/Idle Cropland	93.03
Oats	57.60
Double Crop (Oats/Corn)	44.45
Grapes	18.47
Cherries	16.64

Source: USDA National Agriculture Statistics Service, 2014

Table 3.2-3. California Department of Conservation Farmland Categories

Farmland Category	Definition
Prime Farmland	Farmland with the best combination of physical and chemical features able to sustain long term agricultural production. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields.
Farmland of Statewide Importance	Farmland similar to Prime Farmland but with minor shortcomings, such as greater slopes or less ability to store soil moisture.
Unique Farmland	Farmland of lesser quality soils used for the production of the state's leading agricultural crops. This land is usually irrigated, but may include non-irrigated orchards or vineyards as found in some climatic zones in California.
Farmland of Local Importance	Land of importance to the local agricultural economy as determined by each county's board of supervisors and a local advisory committee.

Source: California Department of Conservation, Division of Land Resource Protection, 2012

Table 3.2-4. Important Farmland Acreages – Proposed Project

Important Farmland Category	Study Area (acres)	Percent of Total Study Area (acres)	Corridor (acres)	Percent of Total Corridor (acres)
Prime Farmland	14,205	4.4	495	3.7
Farmland of Statewide Importance	618	0.2	0	0.0
Unique Farmland	779	0.2	31	0.2
Farmland of Local Importance	57,035	17.4	1,561	11.6
Total	72,637	22.2	2,087	15.5

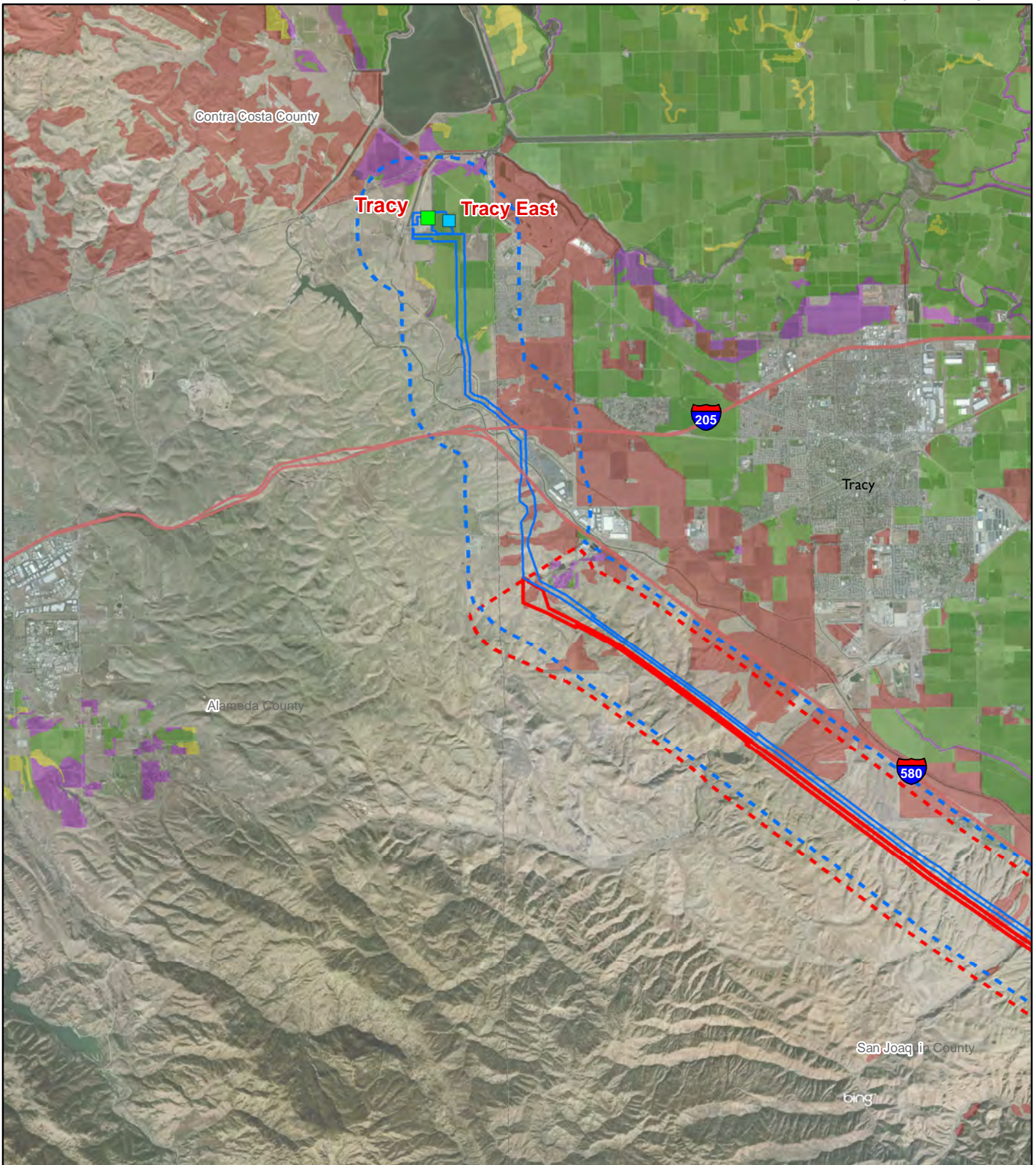
Source: California Department of Conservation, Division of Land Resource Protection, 2012; Aspen calculations

As shown in Figures 3.2-1a through 3.2-1d, the study area contains substantial amounts of Important Farmland (72,637 acres), which is consistent with the region's highly productive agricultural land base. The greatest amount of land is designated as Farmland of Local Importance (57,035 acres) and Prime Farmland (14,205 acres). Farmland of Local Importance within the study area is primarily located south of the Patterson Pass Road. Prime Farmland within the study area is primarily located between the Tracy Substation and Patterson Pass Road with the exception of various parcels scattered throughout the corridor south of Patterson Pass Road. Within the Proposed Project corridors, the greatest amounts of agricultural land are designated as Farmland of Local Importance (1,561 acres) and Prime Farmland (495 acres).

3.2.1.2 Regulations, Plans, and Standards

Farmland Protection Policy Act (FPPA). The Farmland Protection Policy Act, 7 U.S.C. §§ 4201, *et seq.*, was enacted in 1981 to minimize the impact federal programs have on the unnecessary and irreversible conversion of farmland to nonagricultural uses. It assures that to the extent possible, federal programs are administered to be compatible with state, local units of government, and private programs and policies to protect farmland. Federal agencies are required to develop and review their policies and procedures to implement the FPPA every two years. The FPPA does not authorize the Federal Government to regulate the use of private or non-federal land or, in any way, affect the property rights of owners. Projects are subject to FPPA requirements if they will irreversibly convert farmland (directly or indirectly) to nonagricultural use; and are either completed by a federal agency or with assistance from a federal agency. For the purpose of FPPA, farmland includes Prime Farmland, Unique Farmland, and Land of Statewide or Local Importance (defined in Table 3.2-3 above). Farmland subject to FPPA requirements does not have to be currently used for cropland. It can be forest land, pastureland, cropland, or other land, but not water or urban built-up land. Compliance is to be coordinated with the U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS).

The California Land Conservation Act (Williamson Act). The California Land Conservation Act of 1965, more commonly referred to as the Williamson Act, established a program to allow local governments to enter into 10-year contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space use. In return, landowners receive property tax adjustments. The property tax assessments are determined based on the agricultural or open space land uses rather than the land's full market value. Therefore, tax assessments for land parcels under the Williamson Act are much lower than normal. Utility corridors, including transmission line easements, are accepted as a compatible use under Williamson Act contracts.



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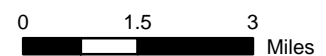
- Substation
- Proposed New Substations
- Proposed Project Corridor
- Corridor Alternatives
- Proposed Project Study Area
- Alternatives Study Area

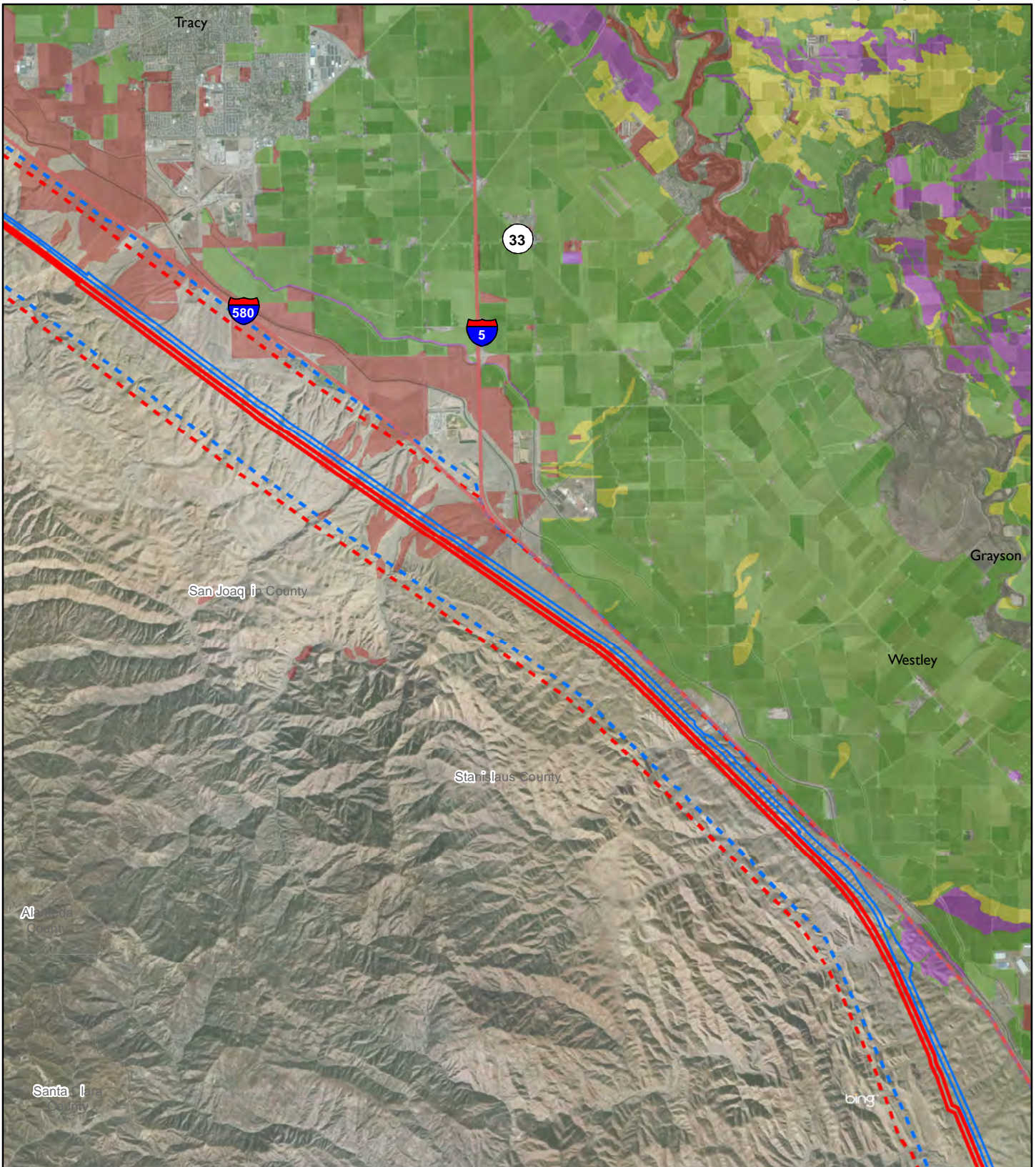
Farmland Class (FMMP)

- Prime Farmland
- Farmland of Statewide Importance
- Unique Farmland
- Farmland of Local Importance

Figure 3.2-1a

Important Farmlands





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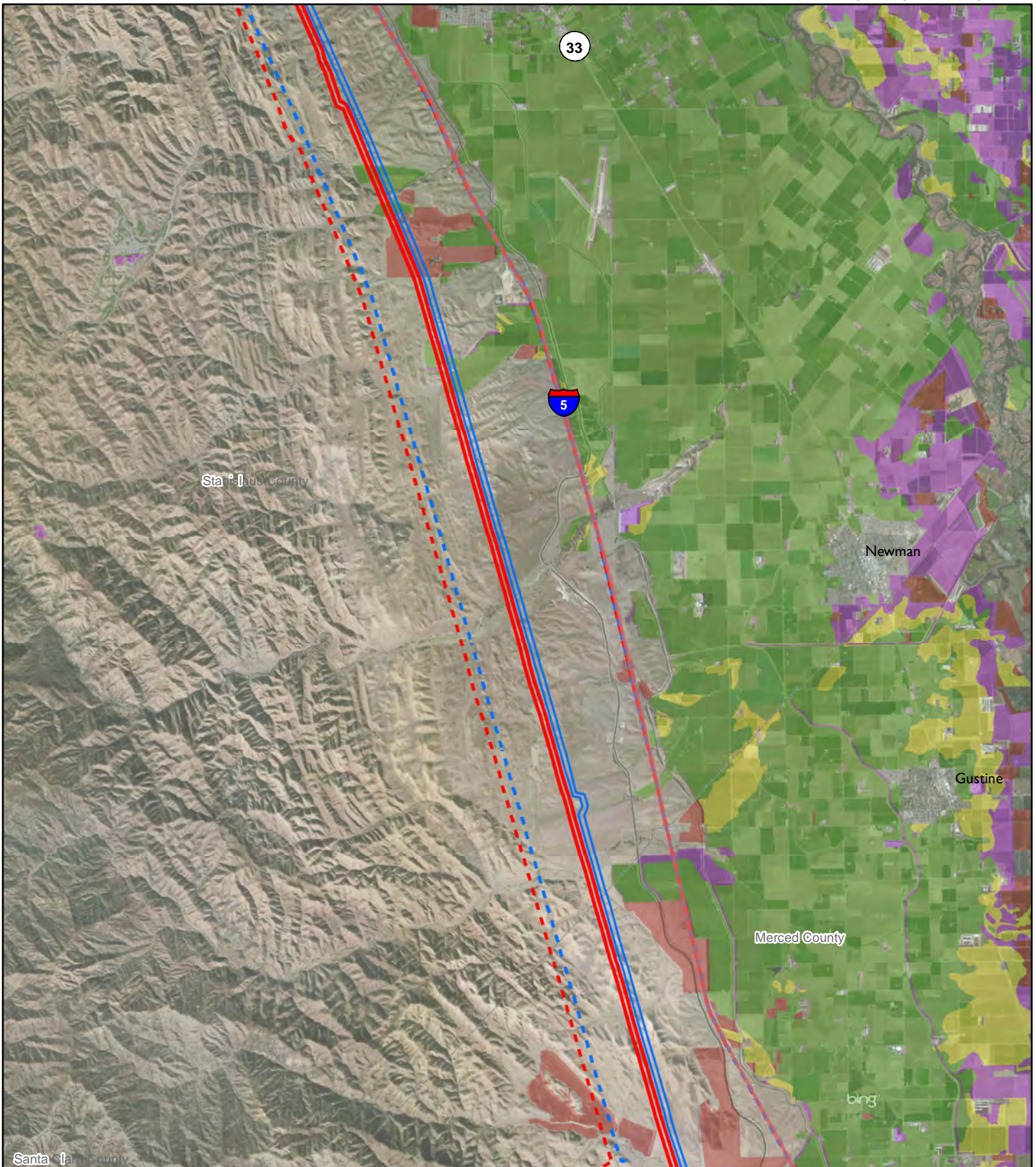
- Substation
- ▬ Proposed Project Corridor
- ▬ Corridor Alternatives
- ▬ Proposed Project Study Area
- ▬ Alternatives Study Area

- Farmland Class (FMMP)
- Prime Farmland
 - Farmland of Statewide Importance
 - Unique Farmland
 - Farmland of Local Importance

Figure 3.2-1b

Important Farmlands





Santa Clara County

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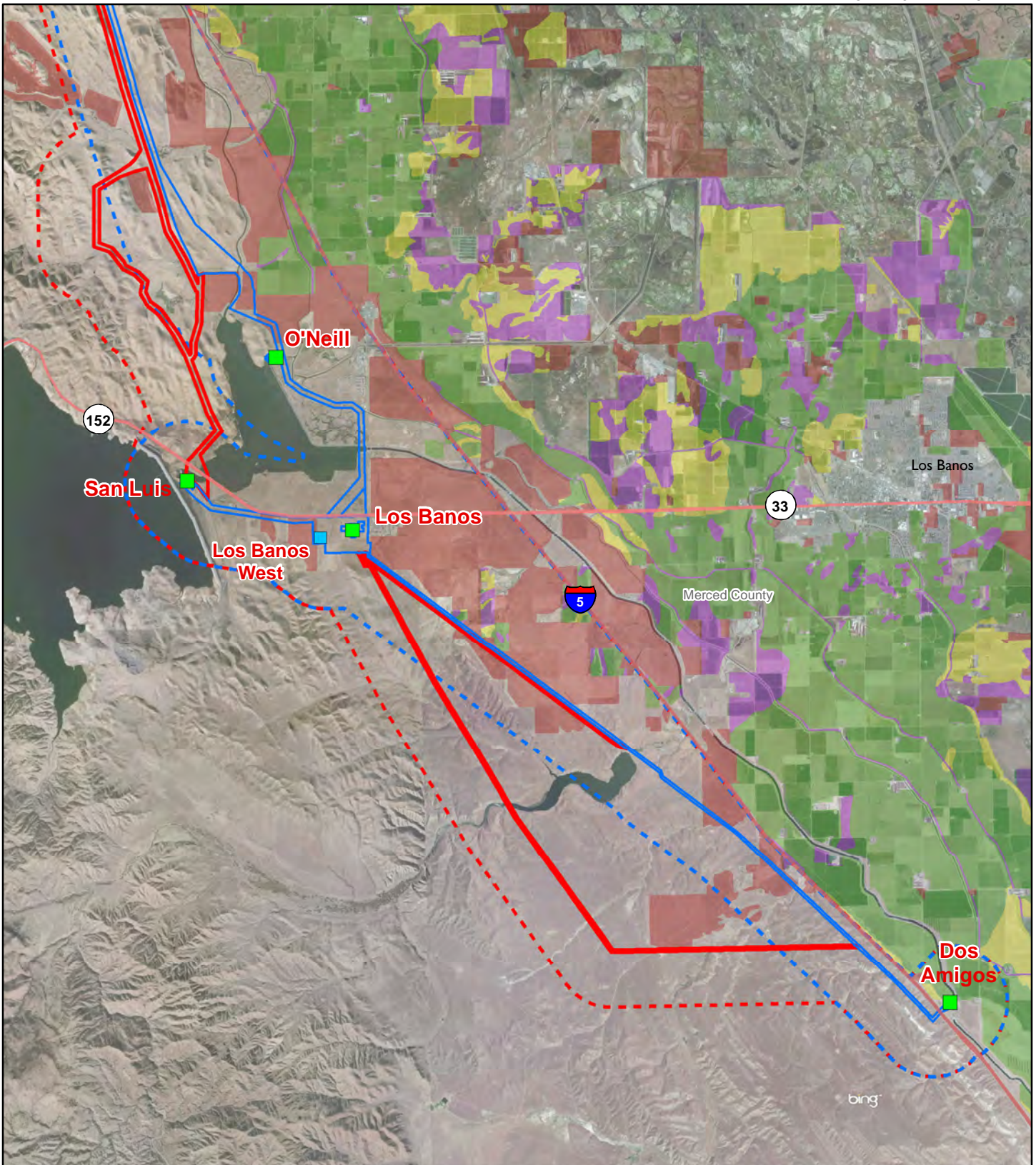
- Substation
- Proposed Project Corridor
- Corridor Alternatives
- Proposed Project Study Area
- Alternatives Study Area

- Farmland Class (FMMP)
- Prime Farmland
 - Farmland of Statewide Importance
 - Unique Farmland
 - Farmland of Local Importance

Figure 3.2-1c

Important Farmlands





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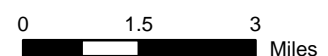
- Substation
- Proposed New Substations
- Proposed Project Corridor
- Corridor Alternatives
- Proposed Project Study Area
- Alternatives Study Area

Farmland Class (FMMP)

- Prime Farmland
- Farmland of Statewide Importance
- Unique Farmland
- Farmland of Local Importance

Figure 3.2-1d

Important Farmlands



Alameda General Plan. The East County Area Plan (ECAP), designated under the Alameda County General Plan, identifies a portion of the Proposed Project study area considered for expansion as “Large Parcel Agriculture (LPA).” Under the ECAP, the LPA designation is described as follows:

“...this designation permits agriculture uses, agriculture processing facilities, limited agricultural support service uses, secondary residential units, visitor-servicing commercial facilities, recreational uses, public and quasi-public uses, solid waste landfills and related waste management facilities, quarries, windfarms and related facilities, utility corridors, and similar uses compatible with agriculture.”

The Merced General Plan. The Merced County General Plan describes and maps a potential Agricultural Services Center (ASC) zone to the west of San Luis Reservoir. An ASC would provide a location for agricultural services, farm support operations, and convenience commercial services for the rural population. The General Plan also describes and maps potential Planned Agricultural Industrial Development (PAID) zones to the north and to the southeast of San Luis Reservoir.

3.2.2 Corridor Alternatives

3.2.2.1 Patterson Pass Road Alternative

The alternative study area largely overlaps the Proposed Project. Therefore, the existing conditions in this segment will be similar to those described above for the Proposed Project. Existing agriculture resources include a significant amount of land parcels designated as Important Farmland and agricultural cropland. The alternative study area contains much of the Farmland of Local Importance found within the study area for the Proposed Project. However, in contrast to that of the Proposed Project, the alternative study area contains only a small portion of Prime Farmland.

3.2.2.2 Butts Road Alternative

The alternative study area lies farther to the west in comparison to the Proposed Project between Butts Road and the Los Banos Substation. Existing agriculture resources in the alternative study area include several parcels of Farmland of Local Importance to the north and south of the Forebay.

3.2.2.3 West of Cemetery Alternative

The alternative study area overlaps the Proposed Project between Butts Road and the San Luis Substation. However, much of the alternative study area lies farther west of the Proposed Project and traverses more varied terrain. This terrain tends to be less suitable for agriculture land use; therefore, the alternative study area contains only a few parcels designated as Important Farmland and less land under current agriculture production in comparison to the Proposed Project.

3.2.2.4 West of O’Neill Forebay 70-kV Alternative

Much of the alternative study area overlaps the Proposed Project with the exception of a portion on the west side of the O’Neill Forebay. Where it overlaps, the existing agriculture resources are similar to that described for the Proposed Project. Existing agriculture resources include several land parcels designated Important Farmland as well as land under current agriculture production.

The portion of the alternative study area that lies outside of the Proposed Project traverses varying terrain on mostly federal and state land. There are no lands under current agriculture use or designated as Important Farmlands.

3.2.2.5 San Luis to Dos Amigos Alternative

The alternative study area largely overlaps the Proposed Project between the San Luis Substation and the Dos Amigos Substation. Therefore, the existing agriculture resources will be similar to that described for the Proposed Project. Existing agriculture resources include a significant amount of land parcels designated as Important Farmland, as well as land under current agricultural production.

3.2.2.6 Billy Wright Road Alternative

In the vicinity of the Los Banos Substation, the alternative study area largely overlaps the Proposed Project, as a result, the existing agricultural resources will be similar to that described for the Proposed Project. South of the Los Banos Substation, the alternative study area lies farther west of the Proposed Project and traverses more rugged terrain. This terrain tends to be less suitable for agriculture land use. Therefore, the alternative study area contains only a few parcels designated as Important Farmland and less land under current agriculture production.

3.3 Air Quality and Climate Change

3.3.1 Proposed Project

This section describes the existing air quality conditions in the study area, which is defined primarily as the San Joaquin Valley Air Basin (SJVAB).

3.3.1.1 Affected Environment

Climate and Meteorology

Air quality in a study area location is affected by the locations of air pollutant sources, the amount of pollutants emitted, and meteorological and topographical conditions affecting their dispersion. Atmospheric conditions, including wind speed, wind direction, and air temperature gradients, interact with the physical features of the landscape to determine the movement and dispersal of air pollutants. The climate in the San Joaquin Valley (Valley) is Mediterranean, with mild wet winters and warm dry summers. The local climate is most affected by the Pacific High Pressure System over the eastern Pacific Ocean, and local topography. During winter months, a persistent high-pressure area over the Great Basin Region to the east of the Sierra Nevada also affects the meteorology in the Valley. The geophysical boundaries of the Valley are the Sierra Nevada mountains to the east (8,000 to 14,000 feet in elevation), the Southern Coast Ranges to the west (averaging 3,000 feet), and the Tehachapi mountains in the south (6,000 to 8,000 feet). These topographic features restrict air movement through the Valley, and the generally high barometric pressure over the basin prevents movement vertically, thus preventing air pollutants from escaping (Western Regional Climate Center [WRCC], 2014).

Wind direction and speed also play a substantial role in air quality. During summer, winds in the Valley are primarily from the north, ultimately flowing south with partial flow through Tehachapi Pass. During winter, the prevailing winds may be from the north or, less frequently, from the south, but are often stagnate. High atmospheric stability, calm winds, and cold temperatures during winter can trap pollutants in the Valley, especially carbon monoxide and particulate matter. Inversion layers during summer months trap pollutants during the day. As a result, the Valley is highly susceptible to pollutant accumulation over time (WRCC, 2014).

Existing Air Quality

Air quality is regulated by federal (U.S. Environmental Protection Agency [EPA]), state (California Air Resources Board [ARB]), and local agencies (air districts). The federal Clean Air Act (CAA) of 1970, 42 U.S.C. §§ 7401-7671, established National Ambient Air Quality Standards (NAAQS) in 40 CFR Part 50. The NAAQS include both primary (protective of human health) and secondary (protective of property and natural ecosystems) standards for “criteria” pollutants such as: ozone (O₃), carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), particulate matter less than 10 microns in diameter (PM₁₀), and particulate matter less than 2.5 microns in diameter (PM_{2.5}). Regions with air quality levels that exceed NAAQS are designated as “nonattainment” and regions with air quality levels that are less than or equal to NAAQS are designated as “attainment.”

Air quality designations are determined for each criteria pollutant through ambient air quality monitoring. The 1990 CAA Amendments established attainment deadlines for all areas designated as nonattainment. The State of California has adopted standards known as the California Ambient Air Quality Standards (CAAQS) that are typically more stringent than NAAQS. A comparison of federal and state standards is presented in Table 3.3-1.

Table 3.3-1. National and California Ambient Air Quality Standards

Pollutant	Averaging Time	CAAQS	NAAQS	Health Effects
Ozone (O ₃)	1-hour	0.09 ppm	—	Breathing difficulties, lung tissue damage
	8-hour	0.070 ppm	0.075 ppm	
Respirable particulate matter (PM ₁₀)	24-hour	50 µg/m ³	150 µg/m ³	Respiratory disease, lung damage, cancer, premature death
	Annual	20 µg/m ³	—	
Fine particulate matter (PM _{2.5})	24-hour	—	35 µg/m ³	Respiratory disease, lung damage, cancer, premature death
	Annual	12 µg/m ³	15 µg/m ³	
Carbon monoxide (CO)	1-hour	20 µg/m ³	35 ppm	Chest pain in heart patients, headaches, reduced mental alertness
	8-hour	9.0 ppm	9.0 ppm	
Nitrogen dioxide (NO ₂)	1-hour	0.18 ppm	0.100 ppm	Lung irritation and damage
	Annual	0.030 ppm	0.053 ppm	
Sulfur dioxide (SO ₂)	1-hour	0.25 ppm	0.075 ppm	Lung disease and breathing problems in asthmatics
	3-hour	—	0.5 ppm	
	24-hour	0.04 ppm	0.14 ppm	
	Annual	—	0.03 ppm	

Notes:

ppm = parts per million

µg/m³ = micrograms per cubic meter

The ARB divided California into regional air basins according to topographic air drainage features. From a geophysical standpoint, the Proposed Project and all alternatives are located within the SJVAB. Project components within the North Segment and activities of the Proposed Project that take place in Alameda County are located in the jurisdiction of the Bay Area Air Quality Management District (BAAQMD). All other components and activities are in the jurisdiction of the San Joaquin Valley Air Pollution Control District (SJVAPCD).

Table 3.3-2 provides the attainment status of the SJVAB in SJVAPCD jurisdiction with regard to the NAAQS and CAAQS identified in Table 3.3-1. Table 3.3-3 provides the attainment status of San Joaquin Valley portion (far eastern Alameda County) of the BAAQMD jurisdiction. Table 3.3-4 shows the maximum measurements and days over air quality standards for several criteria pollutants in the SJVAB.

Table 3.3-2. San Joaquin Valley Attainment Status

Pollutant	NAAQS ¹	CAAQS ²
Ozone – One hour	No federal standard ³	Nonattainment
Ozone – Eight hour	Nonattainment/Extreme ⁴	Nonattainment
PM ₁₀	Attainment ⁵	Nonattainment
PM _{2.5}	Nonattainment ⁶	Nonattainment
Carbon monoxide	Attainment/Unclassified	Attainment/Unclassified
Nitrogen dioxide	Attainment/Unclassified	Attainment
Sulfur dioxide	Attainment/Unclassified	Attainment
Lead (particulate)	No designation/classification	Attainment
Hydrogen sulfide	No federal standard	Unclassified
Sulfates	No federal standard	Attainment
Visibility reducing particles	No federal standard	Unclassified
Vinyl Chloride	No federal standard	Attainment

1 - See 40 CFR Part 81

2 - See CCR Title 17 Sections 60200-60210

3 - Effective June 15, 2005, the U.S. Environmental Protection Agency (EPA) revoked the Federal 1-hour ozone standard, including associated designations and classifications. EPA had previously classified the SJVAB as extreme nonattainment for this standard. EPA approved the 2004 Extreme Ozone Attainment Demonstration Plan on March 8, 2010 (effective April 7, 2010). 75 Fed. Reg. 10420 (2010) Many applicable requirements for extreme 1-hour ozone nonattainment areas continue to apply to the SJVAB.

- 4 - Though the Valley was initially classified as serious nonattainment for the 1997 8-hour ozone standard, EPA approved Valley reclassification to extreme nonattainment in the Federal Register on May 5, 2010 (effective June 4, 2010). 75 Fed. Reg. 24409 (2010).
5 - On November 12, 2008, EPA redesignated the San Joaquin Valley to attainment for the PM10 National Ambient Air Quality Standard (NAAQS) and approved the PM10 Maintenance Plan. 73 Fed. Reg. 66759 (2008).
6 - The Valley is designated nonattainment for the 1997 PM2.5 NAAQS. EPA designated the Valley as nonattainment for the 2006 PM2.5 NAAQS on November 13, 2009 (effective December 14, 2009). 74 Fed. Reg. 58688 (2009).

For the activities within Alameda County and BAAQMD, Table 3.3-3 provides the attainment status of the BAAQMD jurisdiction.

Table 3.3-3. BAAQMD Attainment Status for BAAQMD

Pollutant	NAAQS ¹	CAAQS ²
Ozone – One hour	No federal standard	Nonattainment
Ozone – Eight hour	Nonattainment	Nonattainment
PM10	Attainment/Unclassified	Nonattainment
PM2.5	Nonattainment	Nonattainment
Carbon Monoxide	Attainment	Attainment
Nitrogen Dioxide	Attainment	Attainment
Sulfur Dioxide	Attainment	Attainment
Lead (Particulate)	No designation/classification	Attainment
Hydrogen Sulfide	No federal standard	Unclassified
Sulfates	No federal standard	Attainment
Visibility Reducing Particles	No federal standard	Unclassified
Vinyl Chloride	No federal standard	Unclassified

Source: BAAQMD; http://hank.baaqmd.gov/pln/air_quality/ambient_air_quality.htm.

1 - See 40 CFR Part 81

2 - See CCR Title 17 Sections 60200-60210

Table 3.3-4. SJVAB Criteria Pollutant Data, 2011-2013

Parameter	2011	2012	2013 ¹
8-Hour Ozone			
Maximum	0.105 ²	0.116 ²	0.106 ²
Days above National Standard	109 ²	105 ²	89 ²
Days above State Standard	131 ²	134 ²	112 ²
Hourly Ozone			
Maximum	0.134	0.135	0.123 ²
Days above National Standard	71	72	41
Days above State Standard	3 ²	3 ²	0
Daily PM2.5			
Maximum	80.3	93.4	167.3
Average	18.1	17.9	18.7
Daily PM10			
Maximum	151.8	138.6	350.7 ²
Average	44.8	45.1	65.2 ²
Days above National Standard	0	0	4.8 ²
8-Hour CO			
Maximum	2.71	2.22	NA
Days above Standard	0	0	0

Table 3.3-4. SJVAB Criteria Pollutant Data, 2011-2013

Parameter	2011	2012	2013 ¹
Hourly NO₂			
Maximum	69	78	118 ²
Average	16	15	15
Days above Standard	0	0	1 ²

1 - Values in 2013 were substantially affected by several wildfire and structure fires occurring simultaneously

2 - Indicates exceedance of State or Federal Standards

All measurements in parts per million (ppm)

Source: ARB

Climate Change and Greenhouse Gases

Man-made emissions of CO₂ are largely from combustion of fossil fuels. The major categories of fossil fuel combustion CO₂ sources can be broken into sectors for residential, commercial, industrial, transportation, and electricity generation. The transportation sector includes all motor gasoline and diesel fuel combustion, and the GHG emissions of this sector are not split into activities or uses (i.e., there is no separate estimate for the level of GHG emissions caused by gasoline or diesel fuel combustion-related to statewide construction activities). Other GHG emissions such as methane (CH₄) and nitrous oxide (N₂O) are also tracked by state inventories but occur in much smaller quantities. The global warming potential of methane is about 21 times that of CO₂. When quantifying GHG emissions, the different global warming potentials of GHG pollutants are usually taken into account by normalizing their rates to an equivalent CO₂ emission rate (CO₂ Eq.).

California's greenhouse gas emissions are large in a world-scale context and growing (CEC, 2007). The state emits approximately 500 million metric tons of CO₂ equivalent (MMT CO₂ Eq.) or more than one percent of the 49,000 MMT CO₂ Eq. emitted globally (IPCC, 2007). Electricity generation within California emits about 50 million metric tons of CO₂ (with yearly variations) or 15 percent of the total statewide CO₂ emissions and about one percent of statewide methane emissions.

Toxic Air Contaminants

Toxic air contaminants (TACs) are a category of air pollutants, separate from criteria pollutants, that pose a present or potential hazard to human health, but which tend to be emitted on a localized and source-specific basis and cause impacts that are typically more localized than those created by criteria air pollutants. More than 900 toxic air contaminants are recognized by different regulatory agencies. Although there are no ambient air quality standards for these pollutants, sources are regulated with emission- and risk-based requirements at the federal, state, and local levels.

3.3.1.2 Regulations, Plans, and Standards

The federal CAA, as amended, and the California Clean Air Act both require that air quality management plans be prepared by the air districts to demonstrate how the ambient air quality standards will be achieved in nonattainment areas.

Applicable Regulations, Plans and Standards also include:

- USEPA Emission Standards for Non-Road Diesel Engines. The USEPA has established a series of cleaner emission standards for new off-road diesel engines culminating in the Tier 4 Final Rule of June 2004. Tier 4 or Interim Tier 4 standards apply to all off-road diesel engines model year 2012 or newer.

- USEPA Non-Road Diesel Fuel Rule. In May 2004, the USEPA set sulfur limits for non-road diesel fuel. Under this rule, sulfur levels in non-road diesel fuel are now limited to 15 ppm (USEPA, 2004).
- USEPA Emission Standards for On-Road Trucks. To reduce emissions from on-road, heavy-duty diesel trucks, the USEPA established a series of cleaner emission standards for new engines, starting in 1988.
- USEPA General Conformity Rule. Western must make a determination of whether approval of the Project (i.e., a federal action) would cause or contribute to a violation of the NAAQS or interfere with attainment planning (40 CFR Part 93 et seq.).
- California ARB California Diesel Risk Reduction Plan. ARB has adopted several regulations that are meant to reduce the health risk associated with on- and off-road and stationary diesel engine operation. This plan recommends many control measures with the goal of an 85 percent reduction in diesel particulate matter (DPM) emissions by 2020.
- California ARB Emission Standards for On-Road and Off-Road Diesel Engines. The ARB, similar to the USEPA on-road and off-road emissions standards, regulations described above, has established emission standards for new on-road and off-road diesel engines. These regulations have model year based emissions standards for NO_x, hydrocarbons, CO, and particulate matter.
- California ARB Emission Standards for Off-Road Large Spark-Ignition Engines. The ARB has established emission standards for off-road equipment using large spark-ignition (e.g., gasoline-powered 25 horsepower and greater) engines produced in 2001 or later. These regulations have model year based emissions standards for NO_x, hydrocarbons, and CO.
- California ARB In-Use Off-Road Vehicle Regulations. The state has also enacted a regulation for the reduction of diesel particulate matter (DPM) and criteria pollutant emissions from in-use off-road diesel-fueled vehicles.
- California ARB Heavy Duty Diesel Truck Idling Regulation. This ARB rule became effective February 1, 2005, and prohibits heavy-duty diesel trucks from idling for longer than five minutes at a time, unless they are queuing, and provided the queue is located beyond 100 feet from any homes or schools.
- California ARB California Diesel Fuel Regulations. In 2004, the ARB set limits on the sulfur content of diesel fuel sold in California for use in on-road and off-road motor vehicles.
- California ARB Statewide Portable Equipment Regulation Program. The PERP establishes a uniform program to regulate portable engines and portable engine-driven equipment units.
- San Joaquin Valley Air Pollution Control District rules and regulations including: Rule 4101 (Visible Emissions), Rule 4102 (Nuisances), and Regulation VIII (Fugitive PM10 Prohibitions).
- San Joaquin Valley Air Pollution Control District Guidance for Assessing and Mitigating Air Quality Impacts (March 2015). The Guidance defines the thresholds that the air district has adopted for determining the significance of criteria air pollutant emissions, toxic air contaminants, and odors.
- Revised Draft NEPA Guidance on Consideration of the Effects of Climate Change Impacts and Greenhouse Gas Emissions (December 2014). This guidance indicates that GHG from a federal action usually warrant quantitative disclosure if likely to exceed a level of 25,000 MTCO₂e annually.
- The California Global Warming Solutions Act of 2006 (Assembly Bill [AB] 32) mandates that agencies approving a project analyze the project's potential to contribute to climate change through emissions of greenhouse gases (GHG).
- Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act (January 2010).

- California ARB Regulation for Reducing Sulfur Hexafluoride (SF₆) Emissions from Gas Insulated Switchgear (17 CCR 95350 to 95359). This regulation for reducing SF₆ emissions from electric power system gas insulated switchgear requires jurisdictional owners of such switchgear to: (1) annually report their SF₆ emissions; (2) determine the emission rate relative to the SF₆ capacity of the switchgear; (3) provide a complete inventory of all gas insulated switchgears and their SF₆ capacities; (4) produce a SF₆ gas container inventory; and (5) keep all information current for CARB enforcement staff inspection and verification.

3.3.2 Corridor Alternatives

The study areas for the corridor alternatives are within the study area for the Proposed Project. Therefore, existing air quality is the same as described for the Proposed Project and the alternatives are subject to the same standards.

3.4 Biological Resources

The information presented in this section is summarized from the *San Luis Transmission Project Biological Survey Report*, Appendix C of this Draft EIS/EIR. Refer to that document for more detailed information on the affected environment for the Proposed Project and alternatives.

3.4.1 Proposed Project

The *study area* for biological resources includes a buffer area surrounding the Proposed Project and its alternatives, as described in Section 3.1. The *Project area* is the area within which Project components (transmission lines, access roads, and temporary construction areas) could be located. The broader study area is used to identify biological resources in areas within and near the Project that could be subject to indirect effects, while direct effects would be limited to the Project area. Plant communities, wetlands and waters of the U.S. and state, and special-status species occurrences were surveyed only in the Project area, but their potential for occurrence has been extrapolated to the entire study area based on information obtained from the California Natural Diversity Database (CNDDDB), California Native Plant Society (CNPS) on-line electronic inventory of rare and endangered plants of California; review of aerial imagery; the online eBird database of bird sightings; local biological resources reports and conservation plans; literature review regarding regionally occurring special-status species; and consultation with the U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Wildlife (CDFW), and other local species experts.

3.4.1.1 Affected Environment

Baseline data for the study area was collected from several sources, including the CNDDDB; CNPS on-line electronic inventory of rare and endangered plants of California, 8th edition; review of aerial imagery; the online eBird database of bird sightings; local biological resources reports and conservation plans; literature review regarding regionally occurring special-status species; and consultation with the USFWS, California Department of Fish and Wildlife (CDFW, formerly CDFG), and other local species experts. The area covered by the CNDDDB search included the USGS 7.5 minute series quadrangles through which the Project passes, as well as the surrounding quadrangles. Habitat-level reconnaissance surveys and vegetation mapping were conducted in spring of 2014. Portions of the Project area were not visited due to right-of-entry restrictions on several land-holdings, and most of the unvisited areas were not visible from public access points. Refer to Appendix C for more information on surveys and background research.

The study area is in the western San Joaquin Valley along the foothills of the Diablo Range. The study area encompasses primarily open space with varying terrain and sparse vegetation. Steep terrain in the western portion gives way to flat agriculture lands to the east. The study area roughly parallels I-5, the Delta-Mendota Canal, and the California Aqueduct. It also abuts the O'Neill Forebay and the east side of the San Luis Reservoir. This portion of the study area is primarily open space designated for recreational use and wildlife conservation. Several areas of residential and commercial development and scattered agriculture lands lie to the east near the Forebay. South of the Forebay, the study area crosses the Los Banos Creek Reservoir, and then continues through rural and undeveloped private lands, with scattered development and agriculture lands to the east, before crossing over I-5 and terminating at the Dos Amigos Substation. Climate in the region is temperate, with mild winters and hot, dry summers.

Plant Communities

Plant communities were mapped only within the actual Project area; these are shown on Figure 3 of the Biological Survey Report in Appendix C and summarized below. See Appendix C for detailed vegetation descriptions.

Sensitive Plant Communities

The following plant communities are designated as sensitive by the California Department of Fish and Wildlife (CDFW).

- **Freshwater Marsh.** This vegetation corresponds to the coastal and valley freshwater marsh described in Holland (1986). It is dominated by perennial, emergent monocots to 4-5 meters tall, often forming completely closed canopies. *Schoenoplectus* spp. and *Typha* spp. dominate. It occurs in sites that lack significant water currents and that are permanently flooded by freshwater. In the Project area, freshwater marsh was mapped in various drainages including Patterson Run, Corral Hollow Creek, Mountain House Creek, Del Puerto Creek, Lone Tree Creek, and Salado Creek.
- **Riparian Great Valley Forest.** This vegetation corresponds to the great valley cottonwood riparian forest and sycamore alluvial woodland described in Holland (1986). It is a dense, broad-leaved, winter-deciduous riparian forest dominated by cottonwood (*Populus fremontii*) and willow (*Salix* spp.) that occurs on fine-grained alluvial soils near perennial or nearly perennial streams. In sycamore alluvial woodland, sycamores (*Platanus racemosa*) are dominant and mostly well-spaced. Understory vegetation is mulefat (*Baccharis salicifolia*), willows, California sagebrush (*Artemisia californica*), and non-native grasses. In the Project area, riparian great valley forest was mapped along major drainages, including Corral Hollow, Lone Tree, and Salado creeks. Sycamore alluvial woodland was mapped along Orestimba creek.
- **Vernal Pool.** This corresponds to the northern claypan vernal pool described in Holland (1986). It occurs in depressions in grassland with vernal pool plants such as *Eryngium* spp., *Plagiobothrys* spp., *Lasthenia* spp., *Psilocarphus* spp., etc. Often more or less saline. Vernal pools were mapped in grasslands in the central and southern portions of the Project area.
- **Grassland, Native Perennial.** This vegetation corresponds to the valley needlegrass grassland and valley wildrye grassland described in Holland (1986). Valley needlegrass grassland has at least 5 percent absolute cover or 10 percent relative cover of purple needle grass (*Nasella pulchra*); other species include non-native grasses such as red brome (*Bromus rubens*), wild oats (*Avena* spp.), and hare barley (*Hordeum murinum* ssp. *leporinum*), and native and non-native forbs. Valley wildrye grassland has at least 50 percent relative cover of creeping wildrye (*Elymus triticoides*). It typically occurs along creeks and drainages and can also be a seasonal wetland type. In the Project area, native grasslands were mapped in small areas near O'Neill Forebay and San Luis Reservoir.

Other Plant Communities and Land Cover Types

- **Riparian Great Valley Scrub.** This vegetation corresponds to the great valley willow scrub described in Holland (1986). It is dominated by shrubby willows such as arroyo willow (*Salix lasiolepis*) and narrow-leaved willow (*Salix exigua*), with few to no cottonwood trees. Understory species include mulefat, Himalayan blackberry (*Rubus armeniacus*), and herbaceous species such as rabbit's-foot grass (*Polypogon monspeliensis*), nut sedge (*Cyperus eragrostis*), rushes (*Juncus* spp.), sedges (*Carex* spp.), curly dock (*Rumex crispus*), and brass buttons (*Cotula coronopifolia*). In the Project area, riparian great valley scrub was mapped along several unnamed intermittent drainages and also in isolated patches along Mountain House Creek.

- **Elderberry, Isolated.** Elderberry shrubs (*Sambucus nigra* ssp. *caerulea*) were mapped because they can support the federally listed valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*). Elderberry shrubs occur within the great valley cottonwood riparian forest in one area along Salado Creek.
- **Grassland, Non-native Annual.** This vegetation corresponds to the non-native grassland described in Holland (1986). It is dominated by nonnative grasses and forbs. Native forbs occur at low density and include fiddleneck (*Amsinckia menziesii*), blow wives (*Achyrrachaena mollis*), tall stephanomeria (*Stephanomeria virgata*), Ithuriel's spear (*Triteleja laxa*), red maids (*Calandrinia ciliata*), purple owl's clover (*Castilleja exserta*), small-headed matchweed (*Gutierrezia microcephala*), California poppy (*Eschscholzia californica*), vinegar weed (*Trichostema lanceolatum*), and sacred datura (*Datura wrightii*). Many of the non-native grasslands in the Project area were grazed and some had been disked. It is the most common and widespread vegetation type in the Project area.
- **Wildflower Fields.** This vegetation corresponds to the wildflower fields described in Holland (1986). It is an herb-dominated type with conspicuous annual wildflower displays; species' dominance varies from site to site and year to year. Wildflower fields are typically found on dry sites low in nutrients, and are associated with grasslands or oak woodlands. In most areas vegetation is relatively sparse with bare ground comprising up to 50 percent of the overall ground cover. Wildflower fields were mapped in small inclusions within non-native grasslands in the northern and central portions of the Project area.
- **Coyote Bush Scrub.** This vegetation corresponds to the coyote bush scrub described in Holland (1986). It is a shrubland dominated by coyote brush (*Baccharis pilularis*), with a few mesquites (*Prosopis glandulosa* var. *torreyana*) and big saltbush (*Atriplex lentiformis*). Other species include ripgut brome, gum plant (*Grindelia* sp.), perennial pepperweed (*Lepidium latifolium*), fiddleneck, small melilot (*Melilotus indicus*), winecup clarkia (*Clarkia purpurea* ssp. *quadrivulnera*), seaside heliotrope (*Heliotropium curassavicum*), horehound (*Marrubium vulgare*), and field bindweed (*Convolvulus arvensis*). In the Project area, coyote bush scrub was mapped in small areas near O'Neill Forebay and San Luis Reservoir; and the west side of Los Banos Creek Reservoir.
- **Agricultural Fields.** Areas planted in orchards, irrigated pastures, grain fields planted with hay or alfalfa, and vineyards were mapped as agricultural fields. Agricultural fields were mapped primarily in the North Segment of the Project area.
- **Other.** Areas that did not conform to the other vegetation types described above were mapped as "other." These include eucalyptus groves and areas with planted trees. One area was a presumed mitigation site. Small areas of native California sagebrush (*Artemisia californica*) that occurs within and adjacent to the cottonwood riparian forest community at Corral Hollow Creek were also mapped as "other." In the Project area, it was mapped at Corral Hollow Creek, near Garzas Creek, near Mustang Creek, and near Los Banos.
- **Barren.** Barren areas generally consist of roads, road shoulders, dirt parking lots, and areas that were predominantly paved, rock, gravel, bare soils, or sand. It includes some bare areas from grazing. Vegetation is typically absent, although sparse cover of weedy species such as English plantain (*Plantago lanceolata*), filarees, prickly lettuce (*Lactuca serriola*), oats, soft brome, and ryegrass may be present. Some native plants may also occur such as sticky tarweed, gum plant, and foothill plantain. Barren areas are scattered throughout the Project area.
- **Commercial.** Buildings and paved parking lots or other developed areas were mapped as "commercial." This type is devoid of vegetation with the exception of some landscaped, ornamental plants. In the Project area, commercial areas comprise various roads and developments.

Common Wildlife

Common wildlife habitats in the Project area can be combined into a few distinct categories. Grassland and brush habitats comprise native and non-native grassland, wildflower fields, coyote brush scrub, and most “other” types. These habitats may feature ephemeral and intermittent drainages. Wildlife commonly associated with these habitats include western fence lizard (*Sceloporus occidentalis*), northern Pacific rattlesnake (*Crotalus oreganus oreganus*), gopher snake (*Pituophis catenifer*), California toad (*Anaxyrus boreas halophilus*), California horned lark (*Eremophila alpestris actia*), western meadowlark (*Sturnella neglecta*), common raven (*Corvus corax*), Say’s phoebe (*Sayornis saya*), western kingbird (*Tyrannus verticalis*), black-tailed hare (*Lepus californicus*), striped skunk (*Mephitis mephitis*), non-native red fox (*Vulpes vulpes*), and coyote (*Canis latrans*).

Riparian habitats in the Project area comprise a few narrow stands of riparian forest, including a stand of sycamore alluvial woodland in Orestimba Creek, and riparian scrub. These habitats support species including the ash-throated flycatcher (*Myiarchus cinerascens*), American kestrel (*Falco sparverius*), black phoebe (*Sayornis nigricans*), great horned owl (*Bubo virginianus*), Bullock’s oriole (*Icterus bullockii*), brown-headed cowbird (*Molothrus ater*), and house finch (*Carpodacus mexicanus*). Freshwater marshes support Sierran treefrog (*Pseudacris sierra*), marsh wren (*Cistothorus palustris*), great blue heron (*Ardea herodias*), Virginia rail (*Rallus limicola*), and red-winged blackbird (*Agelaius phoeniceus*); and mallard (*Anas platyrhynchos*), American coot (*Fulica americana*), and common muskrat (*Ondatra zibethicus*) in areas with open water.

Lake habitats in and near the Project area include O’Neill Forebay, San Luis Reservoir, and Los Banos Creek Reservoir. Wildlife include fishes such as bluegill (*Lepomis macrochirus*), common carp (*Cyprinus carpio*), largemouth bass (*Micropterus salmoides*), and white crappie (*Pomoxis annularis*), and birds such as American wigeon (*Anas americana*), bufflehead (*Bucephala albeola*), Canada goose (*Anser canadensis*), and mallard. Drainages with drying pockets of standing water during Project surveys were Corral Hollow Creek, Salado Creek, and Del Puerto Creek. These supported California toad larvae, American bullfrog (*Lithobates catesbeiana*) adults and larvae, and western pond turtle (*Emys marmorata*).

American bullfrogs were observed in irrigation canals. The Delta-Mendota Canal and California Aqueduct are often used by mallard, coot, and double-crested cormorant (*Phalacrocorax auritus*), and bridges over these canals support nesting cliff swallows (*Petrochelidon pyrrhonota*) and nesting rock pigeons (*Columba livia*). Banks of these large canals often support higher densities of small mammals than surrounding habitats (USFWS, 2010c).

Agricultural areas in the Project area include grain fields, pasture, orchard, and vineyard. Red-winged blackbird, Brewer’s blackbird (*Euphagus cyanocephalus*), western meadowlark, and foraging barn swallow (*Hirundo rustica*) were observed. Raccoon (*Procyon lotor*) and striped skunk commonly forage in agricultural areas.

Woodland habitats are limited in the Project area to two eucalyptus groves that also contain scattered ornamental pines (*Pinus* spp.). Eurasian collared dove (*Streptopelia decaocto*), great horned owl, Say’s phoebe, American kestrel, house finch, mourning dove (*Zenaida macroura*), and other birds were observed. One small grove supported at least ten different species of nesting birds during spring 2014 surveys.

Special-Status Species

Special-status species are those plants and animals that are classified in one or more of the following categories:

- **Federal Endangered Species Act (FESA), 16 U.S.C. §§ 1531, et seq.** Listed as endangered or threatened; candidate for federal listing; or proposed for federal listing.
- **Bald and Golden Eagle Protection Act (BGEPA), 16 U.S.C. §§ 668-668d.** Bald and golden eagles are protected under the federal BGEPA.
- **California Endangered Species Act (CESA).** Listed as endangered or threatened; candidate for state listing; or designated as a rare plant.
- **Fully protected species** under the California Fish and Game Code.
- **California Species of Special Concern (SSC).** Designated by CDFW.
- **California Rare Plant Rank (CRPR).** List of plants of conservation priority; maintained by the CNPS in coordination with CDFW.
 - CRPR 1A: Plants presumed to be extinct in California.
 - CRPR 1B: Plants rare or endangered in California and elsewhere.
 - CRPR 2: Plants rare or endangered in California but more common elsewhere.
 - CRPR 3: Plants about which more information is needed – a review list.
 - CRPR 4: Plants of limited distribution – a watch list.

Critical Habitat

Critical habitat is defined under the FESA as “the specific areas within the geographic area currently occupied by a species, at the time it is listed in accordance with Section 1533 of this title, on which are found those physical or biological features essential (I) to the conservation of the species and (II) which may require special management considerations or protection.” 16 U.S.C. § 1532(5). Either the U.S. Fish and Wildlife Service (USFWS) or the National Marine Fisheries Service (NMFS) may designate critical habitat for species listed as threatened or endangered under FESA. Designated critical habitat for twelve species or subspecies occurs within or near the study area: south central coast steelhead, central coast steelhead, Delta smelt, California tiger salamander, California red-legged frog, Alameda whipsnake, longhorn fairy shrimp, vernal pool fairy shrimp, Contra Costa goldfields, large-flowered fiddleneck, Greene’s tuctoria, and Hoover’s spurge (Figure 5 of Appendix C).

Special-Status Plants

Table 3.4-1 presents special-status plants that potentially occur in the study area, or that were observed during surveys of the Project area. It also identifies designated critical habitat for listed plants in and near the study area. See Appendix C for a full discussion of all species considered, including those determined to have low potential or are unlikely to occur in the study area.

Table 3.4-1. Special-Status Plants and Critical Habitat¹ that Occur or May Occur in the San Luis Transmission Project Biological Study Area

Scientific Name / Common Name	Listing Status Federal ² /State ³ / CRPR ⁴	Habitat Type/General Geographic Range	Likelihood of Occurrence and Rationale ⁵
<i>Amsinckia grandiflora</i> Large flowered fiddleneck and critical habitat	FE/SE/1B	Cismontane woodland and valley and foothill grassland. Blooms April to May. Elevation: 275–550m. Known from Alameda, Contra Costa, and San Joaquin Counties.	Low. Potential grassland habitat in Project area. Known from fewer than 5 natural occurrences. Nearest critical habitat is less than 3 miles from the Tracy Substation.

Table 3.4-1. Special-Status Plants and Critical Habitat¹ that Occur or May Occur in the San Luis Transmission Project Biological Study Area

Scientific Name / Common Name	Listing Status Federal ² /State ³ /CRPR ⁴	Habitat Type/General Geographic Range	Likelihood of Occurrence and Rationale ⁵
<i>Astragalus tener</i> var. <i>tener</i> Alkali milk-vetch	—/—/1B	Playas, valley and foothill grassland (alkaline clay), vernal pools in alkaline areas. Blooms March to June. Elevation: 1–60m. Known from Alameda, Contra Costa, San Joaquin, and other counties.	Moderate. Potential grassland and vernal pool habitat in Project area. Recorded in Byron/Livermore and Clifton Court Forebay.
<i>Atriplex cordulata</i> var. <i>cordulata</i> Heartscale	—/—/1B	Chenopod scrub, meadows and seeps, valley and foothill grasslands (sandy) in saline or alkaline areas. Blooms April to October. Elevation: 0–560m. Known from Alameda, Contra Costa, San Joaquin, and other counties.	Moderate. Potential grassland habitat in Project area. Records from Clifton Court Forebay.
<i>Atriplex joaquiniana</i> San Joaquin spearscale	—/—/1B	Chenopod scrub, meadows and seeps, valley and foothill grasslands. Blooms April to October. Elevation: 1–835m. Known from Alameda, Contra Costa, San Joaquin, and other counties.	Moderate. Potential grassland habitat in Project area. Records from Byron, Bryon Hot Springs, Mountain House Rd, and Clifton Court Forebay.
<i>Blepharizonia plumosa</i> Big tarplant	—/—/1B	Valley and foothill grassland, usually on clay soils. Blooms July to October. Elevation: 30–505m. Known from Alameda, Contra Costa, and San Joaquin, Solano, and Stanislaus Counties.	High. Potential grassland habitat in Project area. Records from Tracy, Tesla, Corral Hollow, and many other locations near Project area.
<i>California macrophylla</i> Round-leaved filaree	—/—/1B	Cismontane woodland, valley and foothill grassland on clay soils. Blooms March to May. Elevation: 15–1200m. Known from many counties including Alameda, Contra Costa, Fresno, Merced, and San Joaquin Counties.	Present. Habitat in Project area. Observed in the Project area (Central Segment, and Patterson Pass Road Alternative) along with <i>Convolvulus simulans</i> and <i>Hesperervax caulescens</i> .
<i>Caulanthus lemmonii</i> Lemmon's jewelflower	—/—/1B	Pinyon and juniper woodland, valley and foothill grassland. Blooms March to May. Elevation: 80–1220m. Known from Alameda, Fresno, Merced, San Joaquin, and other counties.	High. Potential grassland habitat in Project area. Records from between Tesla and Corral Hollow, Corral Hollow and Los Banos.
<i>Chamaesyce hooveri</i> Hoover's spurge and critical habitat	FT/-/1B	Vernal pools on volcanic mudflow or clay substrate. Blooms July to October. Elevation 25–250m. Known from Butte, Colusa, Glenn, Merced, Stanislaus, Tehama and Tulare Counties.	Low. Potential vernal pool habitat in Project area on clay substrate but no volcanic mudflow vernal pools observed. There are no records for this species within the CNDDDB search for the Project. Nearest critical habitat is about 15.5 miles north of the O'Neill Forebay.
<i>Clarkia rostrata</i> Beaked clarkia	—/—/1B	Cismontane woodland, valley and foothill grassland on north-facing slopes, sometimes on sandstone. Blooms April to May. Elevation 60–500m. Known from Merced, Mariposa, Stanislaus, and Tuolumne Counties.	Low. Potential grassland habitat in Project area. There are no records for this species within the CNDDDB search for the Project.

Table 3.4-1. Special-Status Plants and Critical Habitat¹ that Occur or May Occur in the San Luis Transmission Project Biological Study Area

Scientific Name / Common Name	Listing Status Federal ² /State ³ /CRPR ⁴	Habitat Type/General Geographic Range	Likelihood of Occurrence and Rationale ⁵
<i>Convolvulus simulans</i> Small-flowered morning-glory	—/—/4	Chaparral (openings), coastal scrub, valley and foothill grassland on clay soils or serpentinite seeps. Blooms March to July. Elevation: 30–700m. Known from Contra Costa, San Joaquin, Stanislaus, and other counties.	Present. Grassland habitat in Project area. This species was found along with <i>California macrophylla</i> within the Project area.
<i>Delphinium californicum</i> ssp. <i>interius</i> Hospital Canyon larkspur	—/—/1B	Chaparral, cismontane woodland (mesic), coastal scrub in wet boggy meadows, openings in chaparral and in canyons. Blooms April to June. Elevation: 195–1095m. Known from Alameda, Contra Costa, San Joaquin, and other counties.	Not Likely to Occur. No potential habitat in Project area. CNDDDB record from a 1938 collection.
<i>Delphinium recurvatum</i> Recurved larkspur	—/—/1B	Chenopod scrub, cismontane woodland, valley and foothill grassland in alkaline soils. Blooms March to June. Elevation: 3–790m. Known from Alameda, Contra Costa, Fresno, Merced, San Joaquin, and other counties.	Moderate. Potential grassland habitat in Project area but limited to areas with alkaline soils. Multiple records in the region.
<i>Eryngium racemosum</i> Delta button-celery	—/SE/1B	Riparian scrub in vernal mesic clay depressions. Blooms June to October. Elevation: 3–30m. Known from Contra Costa, Merced, San Joaquin, and other counties.	Moderate. Potential riparian habitat in Project area. Recorded near Grayson, 2 miles east of Westley.
<i>Eryngium spinosepalum</i> Spiny-sepaled button celery	—/—/1B	Valley and foothill grassland, vernal pools. Blooms April to May. Elevation: 80–255m. Known from Contra Costa, Merced, and other counties.	Moderate. Potential grassland and vernal pool habitat in Project area. Recorded at Byron Airport.
<i>Eschscholzia rhombipetala</i> Diamond-petaled California poppy	—/—/1B	Valley and foothill grassland on alkaline and clay soils. Blooms March to April. Elevation: 0–975m. Known from Alameda, Contra Costa, Colusa, San Joaquin, San Luis Obispo and Stanislaus Counties.	High. Potential grassland habitat in Project area but limited to alkaline and clay soils. Records from Corral Hollow near Castle Rock, Lawrence Livermore National Laboratory, and hills south of Byron.
<i>Hesperis matronalis</i> Hogwallow starfish	—/—/4	Valley and foothill grassland in mesic sites and on clay soils, shallow vernal pools. Blooms March to June. Elevation: 0–505m. Known from Alameda, Contra Costa, San Joaquin, Fresno, Merced, and other counties.	Present. Grassland habitat in Project area. Observed within the Project area in same areas as <i>California macrophylla</i> (Central Segment, and Patterson Pass Road Alternative).
<i>Hibiscus lasiocarpus</i> var. <i>occidentalis</i> Woolly rose mallow	—/—/1B	Freshwater marshes and swamps, often in riprap on sides of levees. Blooms June to September. Elevation: 0–120m. Known from Contra Costa, San Joaquin, and other counties.	Low. Limited potential habitat in Project area. Recorded occurrences from Clifton Court Forebay.

Table 3.4-1. Special-Status Plants and Critical Habitat¹ that Occur or May Occur in the San Luis Transmission Project Biological Study Area

Scientific Name / Common Name	Listing Status Federal ² /State ³ /CRPR ⁴	Habitat Type/General Geographic Range	Likelihood of Occurrence and Rationale ⁵
<i>Lasthenia conjugens</i> Contra Costa goldfields and critical habitat	FE/—/1B	Cismontane woodland, alkaline playas, valley and foothill grassland, vernal pools in mesic sites. Microhabitat is vernal pools, swales and low depressions in open grassy areas. Blooms March to June. Elevation: 0–470m. Known from Alameda, Contra Costa, Mendocino, Monterey, Marin, Napa, Santa Barbara, Santa Clara, Solano, and Sonoma Counties.	Moderate. Potential grassland and marginal vernal pool habitat in Project area and limited areas with alkaline soils. No records in vicinity. Nearest critical habitat is less than 2 miles from Tracy Substation.
<i>Layia munzii</i> Munz's tidy-tips	—/—/1B	Chenopod scrub, valley and foothill grassland on hillsides in white-grey alkaline soils. Blooms March to April. Elevation 150–700m. Known from Fresno, Kern, San Benito, and San Luis Obispo Counties.	Low. Limited potential habitat in Project area based on microhabitat of white-grey alkaline soils.
<i>Lepidium jaredii</i> ssp. <i>album</i> Panoche pepper-grass	—/—/1B	Valley and foothill grassland on white or grey clay lenses on steep slopes, incidental in alluvial fans and washes, prefers clay and gypsum soils. Blooms February to June. Elevation 185–275m. Known from Fresno, San Benito and San Luis Obispo counties.	Low. Limited potential habitat in Project area based on microhabitat preference.
<i>Leptosyne hamiltonii</i> Mt. Hamilton coreopsis	—/—/1B	Cismontane woodland in rocky areas. Blooms March to May. Elevation: 550–1300m. Known from Alameda and other counties.	Not Likely to Occur. No habitat in Project area. Known from Mt. Hamilton Range.
<i>Lilaeopsis masonii</i> Mason's lilaeopsis	—/SR/1B	Brackish or freshwater marshes and swamps, riparian scrub. Blooms April to November. Elevation: 0–10m. Known from Alameda, Contra Costa, San Joaquin, and other counties.	Low. Typical habitat lacking in Project area. Recorded occurrences from Clifton Court Forebay and other areas.
<i>Limosella australis</i> Delta mudwort	—/—/2B	Freshwater or brackish marshes and swamps, riparian scrub usually on mud banks. Blooms May to August. Elevation: 0–3m. Known from Contra Costa, San Joaquin, and other counties.	Low. Limited habitat in Project area. Known from Victoria Canal.
<i>Madia radiata</i> Showy golden madia	—/—/1B	Cismontane woodland, valley and foothill grassland mostly on adobe clay in grassland or around shrubs. Blooms March to May. Elevation: 25–1215m. Known from Contra Costa, Fresno, Kings, Kern, Monterey, San Joaquin, and other counties.	Moderate. Potential grassland habitat in Project area but limited to adobe clay soils. Records from lower Hospital Canyon, mouth of Big Panoche Canyon, Corral Hollow, and Tumey Hills.
<i>Malacothamnus hallii</i> Hall's bush-mallow	—/—/1B	Chaparral, coastal scrub. Blooms May to October. Elevation: 10–760m. Known from Contra Costa, Merced, Stanislaus, and other counties.	Not Likely to Occur. No habitat in Project area.
<i>Monardella leucocephala</i> Merced monardella	—/—/1A	Valley and foothill grassland; requires moist subalkaline sands associated with low elevation grassland. Blooms May to August. Elevation 35–100m.	Not Likely to Occur. This species is presumed extinct. The microhabitat requirements for this species area lacking in Project area. No recorded occurrences in CNDDB search.

Table 3.4-1. Special-Status Plants and Critical Habitat¹ that Occur or May Occur in the San Luis Transmission Project Biological Study Area

Scientific Name / Common Name	Listing Status Federal ² /State ³ /CRPR ⁴	Habitat Type/General Geographic Range	Likelihood of Occurrence and Rationale ⁵
<i>Navarretia nigelliformis</i> ssp. <i>radians</i> Shining <i>navarretia</i>	—/—/1B	Cismontane woodland, valley and foothill grassland, vernal pools, sometimes clay. Blooms April to July. Elevation: 76–1000m. Known from Alameda, Contra Costa, San Joaquin, and other counties.	Moderate. Potential grassland and vernal pool habitat in Project area. Recorded at Billie Wright Rd northeast of Los Banos Valley.
<i>Navarretia myersii</i> ssp. <i>myersii</i> Pincushion <i>navarretia</i>	—/—/1B	Vernal pools, often acidic. Blooms April to May. Elevation 20–330m. Known from Amador, Calaveras, Merced, Placer, and Sacramento Counties.	Low. Vernal pool habitat in Project area but not acidic soils. No records in CNDDB search.
<i>Phacelia ciliata</i> var. <i>opaca</i> Merced <i>phacelia</i>	—/—/3	Valley and foothill grassland on adobe or clay soils of valley floors, open hills or alkaline flats. Blooms February to May. Elevation: 60–100m. Known from Merced County.	Very low. Limited potential grassland habitat in Project area. No known occurrences within CNDDB search area.
<i>Phacelia phacelioides</i> Mt. Diablo <i>phacelia</i>	—/—/1B	Chaparral, cismontane woodland, on rock outcrops and talus slopes, sometimes on serpentinite. Blooms April to May. Elevation: 500–1370m. Known from Contra Costa, Stanislaus, and other counties.	Not Likely to Occur. No habitat in Project area.
<i>Pseudobahia bahiifolia</i> Hartweg's golden <i>sunburst</i>	FE/SE/1B	Cismontane woodland, valley and foothill grassland on acidic clay soils. Blooms March to April. Elevation 15–150m. Known from Fresno, Madera, Merced, Stanislaus, Tuolumne, and Yuba Counties.	Low. No acidic clay soils in Project area. No recorded occurrences in CNDDB search area.
<i>Sidalcea keckii</i> Keck's checkerbloom	FE/—/1B	Cismontane woodland, valley and foothill grassland — occurs on grassy slopes in blue oak woodland. Blooms April to June. Elevation: 75–650m. Known from Fresno and Merced Counties.	Not Likely to Occur. No blue oak woodland in Project area. No recorded occurrences in CNDDB search area.
<i>Senecio aphanactis</i> Chaparral ragwort	—/—/2B	Chaparral, cismontane woodland, coastal scrub, sometimes in alkaline soils. Blooms January to April. Elevation: 15–800m. Known from Alameda, Contra Costa, Fresno, Merced, and other counties.	Not Likely to Occur. No habitat in Project area.
<i>Streptanthus insignis</i> ssp. <i>lyonii</i> Arburua Ranch jewel-flower	—/—/1B	Coastal scrub, sometimes serpentinite. Blooms March to May. Elevation: 230–855m. Known from Merced County.	Not Likely to Occur. No habitat in Project area.
<i>Symphyotrichum lentum</i> Suisun Marsh aster	—/—/1B	Brackish and freshwater marshes and swamps. Blooms May to November. Elevation: 0–3m. Known from Contra Costa, San Joaquin, and other counties.	Low. Limited habitat in Project area. No known occurrences within 1 mile of Project area.
<i>Trichocoronis wrightii</i> var. <i>wrightii</i> Wright's <i>trichocoronis</i>	—/—/2B	Meadows and seeps, marshes and swamps, riparian forest, vernal pools. Microhabitat is mud flats of vernal lakes, drying river beds, alkali meadows. Blooms May to September. Elevation: 5–435m. Known from Merced County and presumed extirpated from San Joaquin County.	Low. Microhabitat not present or very limited in Project area.

Table 3.4-1. Special-Status Plants and Critical Habitat¹ that Occur or May Occur in the San Luis Transmission Project Biological Study Area

Scientific Name / Common Name	Listing Status Federal ² /State ³ / CRPR ⁴	Habitat Type/General Geographic Range	Likelihood of Occurrence and Rationale ⁵
<i>Tropidocarpum capparideum</i> Caper-fruited tropidocarpum	—/—/1B	Valley and foothill grassland, alkaline hills on alkaline clay soils. Blooms March to April. Elevation: 1–455m. Known from Alameda, Contra Costa, Fresno, San Joaquin, and other counties.	Moderate. Potential grassland habitat in Project area but limited to alkaline clay soils. Records from Mountain House, Byron, Livermore, and Tracy.
<i>Tuctoria greenii</i> Green's tuctoria and critical habitat	FE/CR/1B	Vernal pools. Blooms May to September. Elevation 30–1070m. Known from Merced County. Presumed extirpated from Fresno, Madera, San Joaquin and Stanislaus counties.	Very Low. Limited potential vernal pool habitat in Project area but no known occurrences within CNDDDB search area. Nearest critical habitat is 29 miles northeast of the Project area.

1 - See Appendix C for locations of critical habitat.

2 - Federal Status:

FE = Endangered – FESA

FT = Threatened – FESA

3 - State Status:

SE = Endangered – CESA

ST = Threatened – CESA

SR = State-designated Rare

4 - California Rare Plant Rank:

1A = CRPR Rank 1A: Plants presumed extirpated in California and either rare or extinct elsewhere.

1B = CRPR Rank 1B: Plants that are rare, threatened or endangered in California and elsewhere.

2B = CRPR Rank 2B: Plants that are rare, threatened or endangered in California but more common elsewhere.

3 = CRPR Rank 3: Plants about which more information is needed – a review list.

4 = CRPR Rank 4: Plants with a limited distribution – a watch list.

5 - Likelihood of occurrence determined by habitat presence and quality, regional species occurrence records, and geographic range.

Special-Status Wildlife and Fish

Table 3.4-2 presents special-status wildlife and fish that potentially occur in the Project area, or that were observed during Project surveys. It also identifies designated critical habitat for listed wildlife and fish in and near the study area. See Appendix C for a full discussion of all species considered, including those unlikely to occur in the study area.

Table 3.4-2. Special-Status Wildlife Species and Critical Habitat¹ that Occur or May Occur in or Near the San Luis Transmission Project Biological Study Area

Scientific Name / Common Name	Listing Status		Habitat Type and General California Range	Potential to Occur in Project Area ⁴
	Fed ²	State ³		
INVERTEBRATES				
Conservancy fairy shrimp <i>Branchinecta conservatio</i>	FE	*	Inhabits relatively large, turbid cool-water vernal pools in the Central Valley. Occurs primarily in six disjunct populations in Tehama, Butte, Solano, Glenn, Merced, and northern Ventura Counties.	Low. Project area outside of current known range, but potential habitat occurs.

Table 3.4-2. Special-Status Wildlife Species and Critical Habitat¹ that Occur or May Occur in or Near the San Luis Transmission Project Biological Study Area

Scientific Name / Common Name	Listing Status		Habitat Type and General California Range	Potential to Occur in Project Area ⁴
	Fed ²	State ³		
Longhorn fairy shrimp and critical habitat <i>Branchinecta longiantenna</i>	FE	*	Found in clear to highly turbid clay or grass-bottomed vernal pools, pools in swales, clear pools in sandstone depressions, and roadside ditches. Known occurrences highly disjunct: 8–10 locations in Merced, Contra Costa, Alameda, and San Luis Obispo Counties, including Altamont Pass and other locations near the Project.	Moderate. Potential habitat in vernal and other seasonal pools and swales within Project area. Nearest critical habitat is more than 6 miles from the Proposed Project.
Valley elderberry longhorn beetle <i>Desmocerus californicus dimorphus</i>	FT	*	Dependent on elderberry shrubs, which are generally found along waterways and in floodplains.	Moderate. Potentially occurs in elderberries found along Salado Creek; elderberry shrubs may occur in other locations not yet surveyed.
Vernal pool fairy shrimp and critical habitat <i>Branchinecta lynchi</i>	FT	*	Found in pools ranging from small, clear sandstone rock pools to large, turbid, alkaline grassland valley-floor pools. Disjunct populations found in the Central Valley from Shasta County to Tulare County, and in the coast ranges from northern Solano County to Ventura County.	Moderate. Potential habitat in vernal and other temporary pools within Project area. Nearest critical habitat is less than 2 miles from the Proposed Project.
Vernal pool tadpole shrimp <i>Lepidurus packardii</i>	FE	*	Inhabits vernal pools and swales ranging from clear to highly turbid and from small to large. Inhabits sites in the Central Valley from Shasta County to northern Tulare County and in the central coast range from Solano County to Alameda County.	Moderate. Potential habitat in vernal pools within Project area.
FISHES				
Green sturgeon <i>Acipenser medirostris</i>	FT	SSC	Found in fresh and saltwater habitats, including deep pools in large, turbulent, freshwater rivers. Spawns in deep, fast water. Occurs in Sacramento River and tributaries, the Delta, and San Francisco, Suisun, and San Pablo bays. The project does not overlap with critical habitat.	Not Likely to Occur. Project is not near suitable or occupied aquatic habitat.
Delta smelt and critical habitat <i>Hypomesus transpacificus</i>	FT	SE	Found in the Sacramento-San Joaquin Delta in brackish waters, also in Sacramento and San Joaquin rivers. Spawns in shallow waters. Critical habitat overlaps with the northernmost ~3 miles of the Project area.	Low. While critical habitat overlaps with a small portion of the northern Project area, the Project is not near suitable or occupied aquatic habitat.
Chinook—Central Valley spring-run ESU <i>Onchorhynchus tshawytscha</i>	FT	ST	This ESU migrates through estuaries and spawns in spring in cold, clean, fast-flowing rivers with gravel bottoms. Occurs in Sacramento River and its tributaries.	Not Likely to Occur. Project area does not overlap with the range of this ESU.
Chinook—Sacramento River winter-run ESU <i>Onchorhynchus tshawytscha</i>	FE	SE	This ESU migrates through estuaries and spawns in winter in cold, clean, fast-flowing rivers with gravel bottoms. Occurs in Sacramento River and its tributaries.	Not Likely to Occur. Project area does not overlap with the range of this ESU.

Table 3.4-2. Special-Status Wildlife Species and Critical Habitat¹ that Occur or May Occur in or Near the San Luis Transmission Project Biological Study Area

Scientific Name / Common Name	Listing Status		Habitat Type and General California Range	Potential to Occur in Project Area ⁴
	Fed ²	State ³		
Steelhead–Central Coast DPS and South Central Coast DPS and critical habitat <i>Oncorhynchus mykiss</i>	FT	*	Anadromous form of rainbow trout found in Sacramento and San Joaquin rivers and their tributaries. Spawns in shallow, swift riffles with small gravel and cobble. The western boundary of this DPS encompasses most of the Project area.	High. Steelhead are often rescued from fish facilities south of Clifton Court Forebay near the north end of Project. Critical habitat for the Central Coast DPS occurs east of Project area; critical habitat for South Central Coast DPS is west of Project area. Nearest critical habitat is less than 2 miles from the Project area.
REPTILES				
Alameda whipsnake and critical habitat <i>Masticophis lateralis</i> <i>euryxanthus</i>	FT	ST	Found in chaparral, valley-foothill riparian, and valley-foothill woodlands on south-facing slopes and ravines where shrubs form a mosaic with trees, grasslands, and rocky outcrops; may also use adjacent grasslands. Current range (2011): throughout Contra Costa County, most of Alameda County, and small portions of northern Santa Clara and western San Joaquin Counties.	Moderate. Records from Corral Hollow area; however, suitable mosaic habitats and riparian are limited within and near Project area. Nearest critical habitat is approx. 2 miles from the Project area.
Blunt-nosed leopard lizard <i>Gambelia sila</i>	FE	SE, CFP	Occurs in semiarid grasslands, alkali flats, and washes; prefers flat areas with open space; avoids dense vegetation. Range extends from northwestern Santa Barbara County and western Kern Co north to central Merced County, but historic range extends northward to Stanislaus/Alameda County line.	High. Occurrence records in the southern portion of study area. From Dos Amigos Substation north to Santa Nella.
California legless lizard <i>Anniella pulchra</i> (<i>sensu stricto</i>) ⁵	*	SSC	Found in sandy and loamy sand soils in saltbush scrub, chaparral, and woodland habitats on Valley floor and adjacent inner coast range foothills. Range extends discontinuously throughout Project area, depending on soil type and vegetation.	High. Multiple records throughout study area.
Coast horned lizard <i>Phrynosoma blainvillii</i>	*	SSC	Most common in lowlands along sandy washes with scattered low bushes, open areas for sunning, bushes for cover, patches of loose soil for burial, and abundant ant and insect prey. Coast ranges from Contra Costa County south to Baja, including Sierra foothills; absent from Central Valley floor.	High. Occurrence records in Project area. Potential habitat in sandy washes associated with creeks and drainages.
Giant garter snake <i>Thamnophis gigas</i>	FT	ST	Found in sloughs, canals, and other small waterways with prey base of small fish and amphibians on the floor of the Central Valley. Requires grassy banks and emergent vegetation for basking, and areas of high ground protected from flooding during winter. Range extends from Chico in Butte County south to Mendota Wildlife Area in Fresno County. Known from Los Banos Creek, but no known records from closer than ~6 miles from Project area.	Moderate. No records from within ~6 miles of Project area but known from Los Banos Creek.

Table 3.4-2. Special-Status Wildlife Species and Critical Habitat¹ that Occur or May Occur in or Near the San Luis Transmission Project Biological Study Area

Scientific Name / Common Name	Listing Status		Habitat Type and General California Range	Potential to Occur in Project Area ⁴
	Fed ²	State ³		
Pacific pond turtle <i>Emys marmorata</i>	*	SSC	Permanent or nearly permanent lakes, ponds, marshes, rivers, streams, & irrigation ditches with aquatic veg. Needs basking sites such as partially submerged logs, vegetation mats, or open mud banks. Nests in suitable uplands, such as sandy banks or grassy, open fields on unshaded, south-facing slopes with less than 25% slope.	Present. Multiple records within 1 mile, and observed in Del Puerto Creek.
San Joaquin whipsnake <i>Masticophis flagellum ruddocki</i>	*	SSC	Occurs in open, dry vegetative associations with little or no tree cover. Found in the coast ranges and southern San Joaquin Valley from Contra Costa south to San Luis Obispo and Kern Counties.	High. Recorded within 1 mile of Project area, with suitable habitat available through much of Project area.
AMPHIBIANS				
California red-legged frog and critical habitat <i>Rana draytonii</i>	FT	SSC	Found ponds, streams, and wetlands. Highly aquatic and prefers permanent, quiet pools and streams with dense vegetation. May travel in a direct route between habitats regardless of cover. In coast ranges from southern Monterey County south to Baja.	High. Multiple records within 1 mile of Project from Corral Hollow north, and from Los Banos Creek. Project overlaps with critical habitat for about 5 miles (Figure 5 of Appendix C).
California tiger salamander—central California DPS <i>Ambystoma californiense</i>	FT	ST, SSC	Annual grasslands and grassy understory of valley-foothill hardwood habitats in central and northern Calif. Needs vernal pools or other aquatic habitats for breeding near uplands with underground burrow. Range from eastern foothills of Sierra west to outer coast range, from Sonoma and Yolo Counties south to Santa Barbara County.	High. Records in northern Project area. Potential habitat in creeks, stock ponds, and vernal or other temporary pools adjacent to suitable uplands. Nearest critical habitat is approximately 2 miles from the Project area.
Foothill yellow-legged frog <i>Rana boylei</i>	*	SSC	Partly shaded streams and riffles with a rocky substrate. Basks on large rocks, dives into water when disturbed. Coast ranges from Oregon border south to Transverse Mountains of Los Angeles County, as well as Sierra and Cascades foothills.	Moderate. Historic records from Corral Hollow and Los Banos Creek. Low potential in other drainages in Project area.
Western spadefoot <i>Spea hammondi</i>	*	SSC	Primarily found in grasslands but will occasionally use valley-foothill hardwood woodlands. Breeds in temporary rain pools without bullfrogs, fish, or crayfish; uses uplands when not breeding. Ranges throughout Central Valley and surrounding foothills from Redding south to southern California.	High. Recorded at Salado Creek; potential habitat in Del Puerto Creek, other creeks, and vernal and other temporary pools in Project area.
BIRDS				
Bald eagle <i>Haliaeetus leucocephalus</i> (nesting and wintering)	BGEPA	SE, CFP	Nests on cliffs or in large trees in mountain and foothill forests and woodlands near reservoirs, lakes, and rivers where it feeds on fish and waterfowl. In winter, also takes hares and other mammals. Resident in suitable nesting areas; winters through much of the rest of the state.	High. No nesting habitat in Project area, but multiple winter and spring eBird reports from San Luis Reservoir and O'Neill Forebay.

Table 3.4-2. Special-Status Wildlife Species and Critical Habitat¹ that Occur or May Occur in or Near the San Luis Transmission Project Biological Study Area

Scientific Name / Common Name	Listing Status		Habitat Type and General California Range	Potential to Occur in Project Area ⁴
	Fed ²	State ³		
Burrowing owl <i>Athene cunicularia</i> (burrow and wintering sites)	*	SSC	Grasslands, deserts, and along roads, canals, and edges of agricultural areas; rarely in vicinity of shrubs and trees; dens in underground burrows typically created by other animals, but also in culverts and debris piles. Found primarily in the Central Valley and other open, flat areas of the state; absent from steep terrain, foothill habitats, and higher elevations.	Present. Potential habitat occurs throughout Project area. Low potential in deeply incised foothills between Corral Hollow and Highway 152. Multiple records in or near Project north of Corral Hollow Creek, an historic record near Del Puerto Creek, and recent records south of O'Neill Forebay. One owl and several active burrows were observed during Project surveys.
California condor <i>Gymnogyps californianus</i>	FE	SE, CFP	Permanent resident of semi-arid mountain ranges surrounding the southern Central Valley. Nests in caves, crevices, behind rock slabs, or on large ledges on high cliffs; roosts on cliffs and in large trees and snags. Forages over large areas of open rangeland; obligate carrion eater.	Low. No occupied or suitable nesting areas within or near Project area. Some potential for foraging individuals from Pinnacles NP 40 mi southwest of south end of Project area. Nearest eBird record is 20 mi W of Los Banos Creek Reservoir, and nearest CNDDDB record is more than 35 miles southwest of Dos Amigos Pumping Plant.
Golden eagle <i>Aquila chrysaetos</i> (nesting and wintering)	BGEPA	CFP	Rolling foothill or coast-range terrain where open grassland turns to scattered oaks, sycamores, or large digger pines. Nests primarily in cliffs and large trees, but also transmission towers and nest platforms in open areas. Resident through much of the state, winter-only in Central Valley.	Present. Multiple records, and observed during spring 2014 surveys; suitable foraging habitat through much of Project area.
Short-eared owl <i>Asio flammeus</i> (nesting)	*	SSC	Require open country with high density of rodent prey, and herbaceous cover at least 12–15 inches tall.	Moderate. Could nest in dense grasslands, open fields, and freshwater marshes, especially around Mountain House Creek and O'Neill Forebay.
Long-eared owl <i>Asio otus</i> (nesting)	*	SSC	Scarce over most of its range. Nests in conifer, oak, riparian, pinyon-juniper, and desert woodlands that are either open or are adjacent to grasslands, meadows, or shrublands. Prefers dense cover.	Moderate. Could nest around O'Neil Forebay and Salado Creek.
Least Bell's vireo <i>Vireo bellii pusillus</i> (nesting)	FE	SE	Found in lowland riparian with willows and dense understory. Nests in a variety of plants that provide concealment with dense foliage. Current range primarily southern Calif but expanding back into historic range, which included Central Valley north to Red Bluff. 2005-2007 nest records at San Joaquin River NWR, Stanislaus County; no recent nesting there.	High. Could occur in any of the dense riparian habitats within the Project area.

Table 3.4-2. Special-Status Wildlife Species and Critical Habitat¹ that Occur or May Occur in or Near the San Luis Transmission Project Biological Study Area

Scientific Name / Common Name	Listing Status		Habitat Type and General California Range	Potential to Occur in Project Area ⁴
	Fed ²	State ³		
Loggerhead shrike <i>Lanius ludovicianus</i> (nesting)	*	SSC	Prefers open, thinly wooded land or scrub savanna with clearings, including meadows, pastures, old orchards. Nests in dense shrubs or small trees with thick foliage, sometimes isolated trees. Found in suitable habitats throughout the state; absent from Sierra and Cascades and primarily forested areas.	Present. Recorded in multiple areas including Corral Hollow, Del Puerto Canyon, O'Neill Forebay, and from Patterson Pass Road north to Clifton Court Forebay. Observed in Project area during surveys, and likely to nest wherever trees and shrubs are found.
Modesto song sparrow <i>Melospiza melodia heermanni</i> (nesting)	*	SSC	Nests in low, dense vegetation in riparian areas and freshwater marshes. Modesto population occurs east of Suisun Marsh, north to Butte and Glenn Counties, south of the greater Bay Area down to northwest Baja.	Moderate. Could nest in dense riparian and freshwater marshes within Project area.
Mountain plover <i>Charadrius montanus</i> (wintering)	* ⁶	SSC	Winter resident on plowed fields, open grasslands with short vegetation, and open sagebrush areas in Central Valley, generally below 1000 feet and rarely near water. Avoids high, dense cover. Found in Central Valley from Sutter/Yuba County south, foothill valleys west of San Joaquin Valley, and Imperial Valley.	Moderate. No known occurrences or other reports within several miles, and most observations are from lower elevations than the Project, but there is potential habitat on grazed grasslands and other open areas with minimal vegetative cover.
Northern harrier <i>Circus cyaneus</i> (nesting)	*	SSC	Nests in a variety of open habitats, especially meadows, grasslands, and open rangelands in dense grasses and shrubs. Resident through much of the Central Valley and Bay Area as well as other parts of the state; may winter where it is not resident.	Present. Observed in Project area during spring 2014 surveys. Recorded around O'Neill Forebay. Suitably dense nesting habitat is limited; nesting potential highest around San Luis Reservoir/O'Neill Forebay.
Swainson's hawk <i>Buteo swainsoni</i> (nesting)	*	ST	Nests in riparian areas and isolated tree stands in open desert, grassland, and cropland. Forages in grasslands, pastures, and suitable grain or alfalfa fields. Primarily a summer resident of the Central Valley and northeastern California; small year-round population in the Delta.	Present. Multiple observations in Project area during 2014 surveys. Recently recorded nesting at Orestimba Creek, and observed there during Project surveys; recent nest records near O'Neill Forebay and observed there during Project surveys. Potential to nest in multiple locations throughout Project area.

Table 3.4-2. Special-Status Wildlife Species and Critical Habitat¹ that Occur or May Occur in or Near the San Luis Transmission Project Biological Study Area

Scientific Name / Common Name	Listing Status		Habitat Type and General California Range	Potential to Occur in Project Area ⁴
	Fed ²	State ³		
Tricolored blackbird <i>Agelaius tricolor</i> (nesting colony)	*	SE	Nests in large colonies near open water in cattail, bulrush, willow, blackberry, wild rose, nettle, and thistle, with open foraging habitat nearby. Endemic and highly colonial. Most numerous in Central Valley. In December 2014, was emergency-listed as endangered for an initial term of 6 months (expires June 29, 2015). CDFW determined in March 2015 that a listing action may be warranted.	Present. Recent records east of O'Neill Forebay, within Proposed Project corridor south of Gonzaga Rd, and around the western edge of San Luis Reservoir; slightly older records farther north. Suitable nesting habitat in a few locations and males heard singing (nesting not detected) at Mountain House Creek. Observed in the Proposed Project North Segment and the Butts Road and West of O'Neill Forebay alternatives during surveys.
White-tailed kite <i>Elanus leucurus</i> (nesting)	*	CFP	Low rolling foothills/valley margins with scattered oaks; open grasslands, meadows, or marshes near isolated dense-topped trees for nesting and perching. Found throughout coastal and interior California; absent from higher elevations and heavily wooded areas.	Moderate. Historic record near Tracy Substation; few other reports in or near Project area. Suitable foraging habitat in shrublands, grasslands, and marshes; potential nesting habitat in riparian woodlands or non-native trees.
Yellow-headed blackbird <i>Xanthocephalus xanthocephalus</i> (nesting)	*	SSC	Nests in freshwater marshes near open water. Found in Central Valley, northeastern and eastern California, and patchily distributed in southern California. Scarce breeder in Central Valley.	Moderate. Historic records from Project vicinity. Potential habitat in freshwater marshes around O'Neill Forebay.
Migratory birds	MBTA	Cal FGC	Nesting migratory birds and their eggs and nests are protected by state and federal statute.	Present. Nests of a few species of migratory birds found in 2014 and others likely.
MAMMALS				
American badger <i>Taxidea taxus</i>	*	SSC	Most abundant in drier, open stages of most habitats; uses underground dens. Resident in suitable habitat throughout the state.	Present. Presumed present throughout Project area.
Fresno kangaroo rat <i>Dipodomys nitratoides exilis</i>	FE	SE	Occurs in alkali sink and open grassland habitats on the floor of the San Joaquin Valley. Not known to occur west of I-5.	Not Likely to Occur. Range of this species does not overlap with Project area.
Giant kangaroo rat <i>Dipodomys ingens</i>	FE	SE	Inhabits grassland and shrub communities on flat to gently sloping (10–22%) terrain. Historic range included Merced County; current range includes Fresno and San Benito Counties. Not currently known to occur in Merced County.	Low. Project is outside of current known range, but suitable habitat is present.
Short-nosed kangaroo rat <i>Dipodomys nitratoides brevinasus</i>	*	SSC	Occupy grasslands with scattered shrubs and desert-shrub associations on friable soils on flats and gently rolling terrain; generally more numerous in lighter, friable soils. Not known to occur in the Project area; general range and habitat overlap with giant kangaroo rat.	Moderate. Unlikely in most of Project area, but potential in grasslands south of O'Neill Forebay.

Table 3.4-2. Special-Status Wildlife Species and Critical Habitat¹ that Occur or May Occur in or Near the San Luis Transmission Project Biological Study Area

Scientific Name / Common Name	Listing Status		Habitat Type and General California Range	Potential to Occur in Project Area ⁴
	Fed ²	State ³		
Riparian (=San Joaquin) woodrat <i>Neotoma fuscipes riparia</i>	FE	SSC	Found in riparian areas supporting trees and brush. Nests in trees, snags, or logs, talus, or lodges in downed woody material. Known only from a single population on San Joaquin River in Caswell Memorial State Park.	Not Likely to Occur. Range does not overlap with Project area and suitable habitat not present.
Riparian brush rabbit <i>Sylvilagus bachmani riparius</i>	FE	SE	Typically inhabits dense thickets of wild rose, blackberry, coyote bush, and wild grape. Rarely ventures far from dense cover. Very restricted distribution; known only from in and around Caswell Memorial State Park in San Joaquin County and introduced to San Joaquin River NWR in Stanislaus County.	Not Likely to Occur. Range does not overlap with Project area and suitable habitat not present.
Pallid bat <i>Antrozous pallidus</i>	*	SSC	Roosts in rocky outcrops, cliffs, caves, mines, trees (including orchards), bridges, barns, porches, bat boxes, occupied and vacant buildings, and even on or near the ground. Forages over open grasslands, oak savanna grasslands, open pine forests, talus slopes, gravel roads, orchards, and vineyards. Range includes all of California.	Moderate. Potential roosting habitat occurs in rocky areas, orchards, and riparian or other trees throughout Project area.
Townsend's big-eared bat <i>Corynorhinus townsendii</i>	*	Cand	Found in a variety of habitats. Roosts in caves, mines, tunnels, and buildings, preferring sites with caves and cavernous features; also roosts in old-growth sycamore. Most common in mesic areas. Found in suitable habitats throughout California.	High. Recorded just south of Corral Hollow Road ~3 miles west of Project area. No known maternity or hibernating habitat within or near Project area. Roosting unlikely, but potential for foraging individuals.
Western mastiff bat <i>Eumops perotis</i>	*	SSC	Roosts primarily in cliffs high above the ground; may also use crevices in buildings, bridges, or boulders. Most common in broad, open areas in habitats from deserts to woodlands to alpine meadows. Range principally desert southwest regions, but extends through coast ranges to SF Bay and elsewhere in California to the Oregon border.	Moderate. Suitable cliff habitat for roosting occurs in two locations in the study area.
Western red bat <i>Lasiurus blossevillei</i>	*	SSC	Roosts primarily in foliage of mature trees, especially willows, cottonwoods, sycamores, and walnuts, in edge habitats adjacent to streams, open fields, orchards, and sometimes urban areas. Females riparian-dependent. Prefers edges or habitat mosaics with trees for roosting and open areas for foraging. Found throughout California from Sierra/Cascade foothills west to the coast; absent from northern California.	Moderate. Potential habitat in mature riparian forest throughout Project area.
San Joaquin kit fox <i>Vulpes macrotis mutica</i>	FE	ST	Dens and forages in grassland, shrubland, alkali meadow, playa, valley oak savanna, and agricultural edges with loose soils. Endemic to Central Valley; current range is San Joaquin Valley and surrounding foothills from southern Kern County north to Contra Costa, Alameda, and San Joaquin Counties.	Present. Recorded in Project area, and a carcass was observed in Project area during spring 2014 surveys. Presumed present but rare throughout Project area.

- 1 - See Appendix C for locations of critical habitat.
- 2 - Federal Status:
 - FE = Endangered – FESA
 - FT = Threatened – FESA
 - BGEPA = Bald and Golden Eagle Protection Act
 - MBTA = Migratory Bird Treaty Act
 - * = no federal status
- 3 - State Status:
 - SE = Endangered – CESA
 - ST = Threatened – CESA
 - Cand = candidate for listing as threatened or endangered under the CESA
 - SSC = California species of special concern
 - CFP = California fully protected. Fully protected species may not be taken or possessed at any time and no licenses or permits may be issued for their take except for collecting these species for necessary scientific research and relocation of the bird species for the protection of livestock.
 - Cal FGC = species protected by California Fish and Game Code
 - * = no state status
- 4 - Likelihood of occurrence determined by habitat presence and quality, regional species occurrence records, and geographic range. See Appendix C for additional species considered unlikely to occur, and rationale for each.
- 5 - Recent genetic work suggests that the former single species, *Anniella pulchra*, comprises multiple species-level taxa (Papenfuss and Parham, 2013). Likely form that occurs in Project area is *A. pulchra*, but geographical limits of proposed species are unknown at this time.
- 6 - Mountain plover was formerly proposed for listing as threatened under the FESA but the proposed rule was withdrawn in May 2011.

Wetlands and Waters of the U.S. and State

Wetlands and waters that are potentially subject to the U.S. Army Corps of Engineers (USACE) and Regional Water Quality Control Board (RWQCB) jurisdiction under the Federal Clean Water Act (CWA), and CDFW jurisdiction under Fish and Game Code Section 1602 were identified throughout the Project study area and are described in detail in Appendix C. The following summarizes the potential wetlands and waters of the U.S. and state identified in the study area.

Creeks and Drainages. Large perennial or intermittent creeks and drainages include Mountain House Creek, Patterson Run, Corral Hollow Creek, Lone Tree Creek, Hospital Creek, Del Puerto Creek, Salado Creek, Crow Creek, Orestimba Creek, Garzas Creek, Romero Creek, San Luis Creek, Los Banos Creek, and Ortigalita Creek. Corral Hollow Creek, Mountain House Creek, Del Puerto Creek, Lone Tree Creek, and Salado Creek had some water within the channel at the time of Project surveys. These creeks also supported freshwater marsh communities within the channel and a cottonwood-willow riparian tree and shrub community along the banks. Smaller, named intermittent drainages within the study area include Martin Creek, Arkansas Creek, Mustang Creek, Ingram Creek, Ortigalita Creek, and Little Salado Creek.

The perennial and intermittent creeks and drainages in the study area are subject to federal and state regulation. Some of the ephemeral drainages may not be jurisdictional under the USACE but would be considered by the state agencies as waters of the state and subject to regulation by the RWQCB and possibly by CDFW.

Aqueducts and Irrigation Ditches and Canals. The Project area crosses the Delta-Mendota Canal and the California Aqueduct near the intersection of I-205 and I-580, and crosses the Aqueduct again south of the O'Neill Forebay. These canals are man-made, concrete-lined channels and although water levels may fluctuate seasonally, the channels are never dry. These aqueducts do not support riparian tree and shrub cover or emergent wetland vegetation, and they are strictly open-water channels. The waters of the Delta-Mendota and California Aqueducts are not jurisdictional since they were constructed in uplands and are not natural drainages.

The Proposed Project and alternative corridors also cross several irrigation ditches and canals for hay and alfalfa fields. These are either vegetated or unvegetated and some are concrete lined while others

are constructed earthen channels. The irrigation ditches and canals are located mostly in the vicinity of Tracy in the northern portion of the Project study area. Although man-made and constructed primarily in uplands, these features could be considered jurisdictional by the USACE if they support wetland vegetation and if they connect hydrologically to a natural creek or navigable waters. The RWQCB could exert jurisdiction over irrigation ditches and canals as waters of the state. However, CDFW likely would not exert jurisdiction as they are not natural channels.

Lakes, Ponds, and Impoundments. Lakes in the study area are large and greater than 6 feet (1.8 m) in depth. Ponds are small and less than 6 feet (1.8 m) deep. Ponds that were created as a result of impounding water within a drainage, such as stock ponds and man-made ponding features, are considered impoundments. Three areas were identified as lakes, the O'Neill Forebay, the San Luis Reservoir, and the Los Banos Creek Reservoir; these are located in the southern portion of the study area. These areas lack wetland vegetation and portions of the banks are concrete-lined. Many of the ponds in the study area have some emergent wetland vegetation around the pond edge.

Lakes, ponds, and impoundments likely qualify as waters of the U.S. and state and would be under the jurisdiction of the USACE, RWQCB, and CDFW. Ponds that are not associated with a natural drainage, and are therefore not hydrologically connected to waters of the U.S., may not have any federal jurisdiction as defined by the USACE.

Freshwater Marsh. Freshwater marshes in the study area occur as a fringe of permanently flooded emergent marsh at and below the ordinary high water of Corral Hollow, Mountain House, Lone Pine, and Salado creeks and flooded portions of roadside ditches and in some of the irrigation ditches. There are also some isolated freshwater marsh areas that may be remnant portions of drainages that have been filled. Portions of this habitat may be seasonally or infrequently exposed during low water or in drought years.

Freshwater marsh is a wetland type and all wetlands are subject to federal and state regulation. If they are hydrologically isolated then there is no federal jurisdiction, but would still qualify as waters of the state under the RWQCB's jurisdiction.

Vernal Pools and Swales. These are seasonal wetlands that occur as depressions within grassland habitat and typically have a restrictive layer such as a hard pan or clay pan in the lower soil profile that creates water ponding for a sufficient length of time to support wetland vegetation, and specifically, plant species associated with vernal pools. Vernal pools are a wetland type and all wetlands are subject to federal and state regulation. If they are hydrologically isolated then there is no federal jurisdiction, but would still qualify as waters of the state under the RWQCB's jurisdiction.

Seasonal Wetlands. Areas identified as seasonal wetlands, but not as vernal pools, occur as shallow to deep depressions, in ditches or intermittent drainages, or above man-made levees, and can include wetlands adjacent to ponds. Some seasonal wetlands were mapped along and within the major creek drainages such as at Patterson Run, Corral Hollow Creek, and Del Puerto Creek. All wetlands are subject to federal and state regulation. If they are hydrologically isolated then there is no federal jurisdiction, but would still qualify as waters of the state under the RWQCB's jurisdiction.

Invasive Species

Invasive weeds include plants designated as federal noxious weeds by the U.S. Department of Agriculture, species listed by the California Department of Food and Agriculture, and other exotic pest plants designated by the California Invasive Plant Council. Roads, highways, railways, utility corridors, and related construction Projects are some of the principal dispersal pathways for invasive weeds. The

introduction and spread of pest plants adversely affect natural plant communities by displacing native plant species that provide shelter and forage for wildlife species.

A number of invasive species were observed in the Project area. The primary invasive weeds include giant reed (*Arundo donax*), perennial pepperweed, Italian thistle (*Carduus pycnocephalus*), winged thistle (*Carduus tenuiflorus*), tocalote (*Centaurea melitensis*), yellow star thistle, bull thistle (*Cirsium vulgare*), stinkwort (*Dittrichia graveolens*), and milk thistle. One very invasive grass species, medusa-head grass (*Elymus caput-medusae*), was also observed in some of the non-native grassland areas. Additional lower priority non-native, invasive species were observed as well; see Appendix C for more discussion of invasive weeds in the Project area.

Giant reed and perennial pepperweed are associated with wetland areas, and perennial pepperweed was observed in many locations throughout the Project area. Perennial pepperweed was observed in multiple locations including, but not limited to, Corral Hollow, Mountain House, Del Puerto, and Lone Tree Creeks. Giant reed was observed only at Corral Hollow Creek.

Wildlife Movement Corridors

Wildlife movement includes migration (usually one direction per season), inter-population movement (long-term genetic exchange), and small travel pathways (daily movement corridors within an animal's territory). While small travel pathways usually facilitate movement for daily home range activities such as foraging or escape from predators, they also provide connection between outlying populations and the main corridor, permitting an increase in gene flow between populations (Zuidema et al., 1997).

Linkages between habitat types can extend for miles between primary habitat areas and occur on a large scale throughout California. They facilitate movement between populations located in discrete areas and those located within larger areas. Even where patches of pristine habitat are fragmented, such as occurs with coastal scrub and many other California habitats, movement between wildlife populations is facilitated through habitat linkages, such as migration corridors and movement corridors (Zuidema et al., 1997).

The Project study area is primarily open space, and existing barriers to wildlife movement include roads, highways, reservoirs, and canals. The area from the Los Banos Creek Reservoir to the north of San Luis Reservoir is a critical migration corridor for San Joaquin kit fox, and the San Luis Reservoir and O'Neill Forebay are substantial barriers to kit fox movement. Busy highways such as State Routes 152 and 33 and I-5, as well as existing urban development, are additional major barriers to movement for this species.

Conservation Easements

Several conservation easements for biological resources exist within the Project area and the study area, as shown in Table 3.4-3.

Table 3.4-3. Conservation Easements

Segment	Within Project Area (Corridors)	Within Study Area (Outside Project Corridors)
North Segment		
Proposed Project	• None	• Haera
Central Segment		
Proposed Project	• Simon Newman Ranch • Tracy 580 Business Park Preserve	• Simon Newman Ranch • Tracy 580 Business Park Preserve
Patterson Pass Road Alternative	• Simon Newman Ranch • Tracy 580 Business Park Preserve	• Simon Newman Ranch • Tracy 580 Business Park Preserve
San Luis Segment (500 kV)		
Proposed Project	• Romero Ranch • San Joaquin kit fox easement	• Romero Ranch • San Joaquin kit fox easement • Aqua Fria Phase I
Butts Road Alternative	• Romero Ranch	• Romero Ranch • Aqua Fria Phase I
West of Cemetery Alternative	• Romero Ranch	• Romero Ranch • Aqua Fria Phase I
San Luis Segment (70 kV)		
Proposed Project	• None	• Aqua Fria Phase I
West of O'Neill Forebay 70-kV Alternative	• Romero Ranch • San Joaquin kit fox easement	• Romero Ranch • San Joaquin kit fox easement
South Segment		
Proposed Project	• None	• Aqua Fria Phase I
San Luis to Dos Amigos Alternative	• None	• Aqua Fria Phase I
Billy Wright Road Alternative	• None	• Aqua Fria Phase I

3.4.1.2 Regulations, Plans, and Standards

Biological resources regulations, plans, and standards include the following. See Appendix C for details.

- **Federal Endangered Species Act (FESA), 16 U.S.C. §§ 1531, *et seq.*** Protects plants and wildlife that are listed as endangered or threatened by the USFWS and NMFS. Section 9 of FESA prohibits the “take” of endangered wildlife, which is defined as “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in such conduct” 16 U.S.C. § 1532(19). For plants, this statute governs removing, possessing, maliciously damaging, or destroying any listed plant on federal land and removing, cutting, digging up, damaging, or destroying any listed plant on non-federal land in knowing violation of state law (16 USC § 1538). Under section 7 of FESA, federal agencies are required to consult with the USFWS if their actions, including permit approvals or funding, could adversely affect a listed species (including plants) or its critical habitat. Through consultation and preparation of a biological opinion, the USFWS may issue an incidental take statement allowing take of the species that is incidental to another authorized activity, provided the action will not jeopardize the continued existence of the species. Section 10 of FESA provides for issuance of incidental take permits to private parties provided a habitat conservation plan is developed.
- **Migratory Bird Treaty Act (MBTA), 16 U.S.C. §§ 703-712.** Under the MBTA it is unlawful to pursue, hunt, take, capture, kill, possess, sell, purchase, barter, import, export, or transport any migratory bird,

or any part, nest, or egg or any such bird, unless authorized under a permit issued by the Secretary of the Interior. Some regulatory exceptions apply. Take is defined in regulations as: “pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect.” The MBTA protects more than 1,000 bird species, more than 800 of which occur in the U.S.

- **Federal Clean Water Act (CWA), 33 U.S.C. §§ 1251-1387.** The objective of the CWA is to “restore and maintain the chemical, physical, and biological integrity of the nation’s waters.” 33 U.S.C. § 1251. Section 404 of the CWA prohibits the discharge of dredged or fill material into “waters of the United States” without a permit from the USACE. 33 U.S.C. § 1344. Waters of the U.S. may include rivers, streams, estuaries, territorial seas, ponds, lakes, and wetlands. Wetlands are defined as those areas “that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” (33 CFR 328.3 7b). The U.S. Environmental Protection Agency also has authority over wetlands and may override a USACE permit. Substantial impacts to wetlands may require an individual permit. Projects that only minimally affect wetlands may meet the conditions of one of the existing nationwide permits. A water-quality certification or waiver pursuant to section 401 of the CWA is required for section 404 permit actions; in California this certification or waiver is issued by one of nine RWQCBs.
- **Plant Protection Act of 2000, 7 U.S.C. §§ 7701 et seq.** Prevents importation, exportation, and spread of pests that are injurious to plants, and provides for the certification of plants and the control and eradication of plant pests. The Act consolidates requirements previously contained within multiple federal regulations including the Federal Noxious Weed Act, the Plant Quarantine Act, and the Federal Plant Pest Act.
- **Executive Order 13112, Invasive Species, 64 Fed. Reg. 6183 (1999).** Requires federal agencies to: “prevent the introduction of invasive species”; “detect and respond rapidly to and control populations of such species in a cost-effective and environmentally sound manner”; “monitor invasive species populations accurately and reliably, provide for restoration of native species and habitat conditions in ecosystems that have been invaded”; “conduct research on invasive species and develop technologies to prevent introduction and provide for environmentally sound control of invasive species”; and “promote public education on invasive species and the means to address them.”
- **Non-Indigenous Aquatic Nuisance Prevention and Control Act of 1990, Pub. L. No. 101-646, as amended by National Invasive Species Act of 1996, Pub. L. No. 104-332.** Establishes a program to prevent the introduction of, and to control the spread of, introduced aquatic nuisance species.
- **California Endangered Species Act (CESA).** Prohibits the take, possession, purchase, sale, import or export of endangered, threatened, or candidate species unless otherwise authorized by permit or in the regulations. Take is defined as to “hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.” CESA allows for take incidental to otherwise lawful actions. State lead agencies are required to consult with the CDFW to ensure that any action they undertake is not likely to jeopardize the continued existence of any endangered or threatened species or result in destruction or adverse modification of essential habitat.
- **California Fish and Game Code sections 3511, 4700, 5050, and 5515 – Fully Protected Species.** Species designated as fully protected under California Fish and Game Code may not be taken or possessed at any time. Prohibits any state agency from issuing incidental take permits for fully protected species, except for scientific research.

- **Native Plant Protection Act (NPPA) of 1977 (Fish and Game Code sections 1900-1913).** Created with the intent to “preserve, protect and enhance rare and endangered plants in this state.” The NPPA is administered by the CDFW. The Fish and Game Commission has the authority to designate native plants as “endangered” or “rare” and to protect endangered and rare plants from take. The CESA provided further protection for rare and endangered plant species, but the NPPA remains part of Fish and Game Code.
- **California Fish and Game Code section 1602 – Lake and Streambed Alteration Program.** Requires that a streambed alteration application be submitted to the CDFW for “any activity that may substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake.” Often, Projects that require a streambed alteration agreement also require a permit from the USACE under section 404 of the Clean Water Act. In these instances, the conditions of the section 404 permit and the streambed alteration agreement may overlap.
- **California Food and Agriculture Code regulations governing noxious weeds.** The California Food and Agricultural Code contains several laws related to noxious and invasive weeds. These include laws related to insect pest control, rodent and weed control and seed inspection, weed-free areas and weed eradication areas, a list of noxious weed species, prohibitions on exotic species introductions, plant quarantine and pest control, and laws targeting specific weed species such as tamarisk.

3.4.2 Corridor Alternatives

The study area for biological resources includes the Project area (the area within which Project components could be located) and a buffer area, as described in Section 3.1. Plant communities, wetlands and waters of the U.S. and state, and special-status species occurrences were surveyed for and mapped only within the Project area, including alternative corridors, but their potential for occurrence has been extrapolated to the entire study area in this description of existing conditions to account for resources that could occur in adjacent areas and could be indirectly affected by the Project or could move in to the Project area prior to Project implementation. See Appendix C for more details on the biological resources in the alternative corridors.

3.4.2.1 Patterson Pass Road Alternative

The alternative corridor largely overlaps the Proposed Project, and most of the affected environment for biological resources would be similar. Sensitive habitats and potentially jurisdictional waters in the Patterson Pass Road Alternative include ephemeral creek, intermittent creek, freshwater marsh, pond, vernal pool, wildflower fields, Great Valley cottonwood riparian forest, and seasonal wetlands. There are 2,525 acres of annual grasslands. Three special-status plants were observed during surveys: round-leaved filaree, small-flowered morning glory, and hogwallow starfish. The alternative corridor also has a eucalyptus grove at Lone Tree Creek that supports a variety of nesting birds, and elderberry shrubs that could support the Valley elderberry longhorn beetle. This alternative overlaps designated critical habitat for the California red-legged frog in the northern portion.

3.4.2.2 Butts Road Alternative

The alternative corridor lies farther to the west in comparison to the Proposed Project between Butts Road and the San Luis Substation. Sensitive habitats and potentially jurisdictional waters in the Butts Road Alternative include ephemeral creek, intermittent creek, other drainages and impoundments, irrigation ditches, freshwater marsh, lake, pond, vernal pool, native perennial grasslands, coyote brush

scrub, and seasonal wetlands. There are 903 acres of annual grasslands. Tricolored blackbird was observed during surveys. This alternative has potential blunt-nosed leopard lizard habitat.

3.4.2.3 West of Cemetery Alternative

This alternative corridor lies farther west of the Proposed Project and traverses more varying terrain. Sensitive habitats and potentially jurisdictional waters in the West of Cemetery Alternative include ephemeral creek, intermittent creek, irrigation ditches, other drainages, freshwater marsh, lake, pond, vernal pool, native perennial grasslands, seasonal wetlands, and coyote brush scrub. There are 995 acres of annual grasslands. This alternative has potential blunt-nosed leopard lizard habitat.

3.4.2.4 West of O'Neill Forebay 70-kV Alternative

A great portion of this alternative corridor overlaps with the Butts Road Alternative and the Proposed Project. Therefore, where they overlap, the existing biological resources would be similar to that described for the Proposed Project and alternative. Sensitive habitats and potentially jurisdictional waters in the West of O'Neill Forebay 70-kV alternative include ephemeral creek, irrigation ditches, other drainages and impoundments, freshwater marsh, lake, vernal pool, seasonal wetlands, and coyote brush scrub. There are 472 acres of annual grasslands. Tricolored blackbird was observed during surveys. This alternative has potential habitat for several special-status species, including San Joaquin kit fox, burrowing owl, California tiger salamander, and blunt-nosed leopard lizard.

3.4.2.5 San Luis to Dos Amigos Alternative

The alternative corridor largely overlaps with that of the Proposed Project between the San Luis and the Dos Amigos Substations. Therefore, the existing biological resources would be similar to that described for the Proposed Project. However, this alternative corridor has no seasonal wetlands. The alternative corridor has 611 acres of annual grasslands, and San Joaquin kit fox was detected during Project surveys.

3.4.2.6 Billy Wright Road Alternative

The Billy Wright Road Alternative corridor largely overlaps with that of the Proposed Project in vicinity of the San Luis Substation. The alternative corridor deviates west from the Proposed Project corridor just south of the Los Banos Substation. From that point, the alternative corridor lies farther west of the Proposed Project and traverses more rugged terrain. The alternative corridor rejoins with the Proposed Project corridor approximately 2 miles from the Dos Amigos Substation, and biological resources in this southernmost portion of the alternative would be the same as the Proposed Project. This alternative is a total of 1.5 miles longer than the Proposed Project in the southern segment. Sensitive habitats and potentially jurisdictional waters in the Billy Wright Road Alternative include ephemeral creek, intermittent creek, freshwater marsh, irrigation ditches, other drainages, and vernal pool. In addition, this alternative corridor contains approximately 17.5 acres of wildflower fields, a habitat that can support several special-status plants. The Proposed Project corridor does not contain any mapped wildflower fields in the southern segment. There are approximately 685 acres of annual grasslands mapped in this alternative corridor, and San Joaquin kit fox sign was detected near this corridor during surveys. This alternative has potential habitat for the blunt-nosed leopard lizard.

3.5 Cultural Resources

This section describes the existing cultural resources in the study area, which is defined as the Proposed Project and alternative corridors plus a one-quarter-mile buffer surrounding them. The primary focus is on the cultural resources present and potentially encountered within the Proposed Project and alternative corridors.

Cultural resources reflect the history, diversity, and culture of the region and people who created them. They can be natural or built, purposeful or accidental, physical or intangible. They encompass archaeological, traditional, and built environment resources, including but not necessarily limited to buildings, structures, objects, districts, and sites. Cultural resources include sites of important events, traditional cultural places and sacred sites, and places associated with an important person. This section is primarily based on three documents produced in support of this EIS/EIR and the regulatory responsibility of Western and the Authority: *Cultural Resources Background and Field Strategy Report for the San Luis Transmission Project (SLTP), Alameda, San Joaquin, Stanislaus, and Merced Counties, California* (Holm et al., 2014a), the *Cultural Resources Inventory for the San Luis Transmission Project (SLTP), Alameda, San Joaquin, Stanislaus, and Merced Counties, California* (Holm et al., 2014b), and the *Cultural Resources Addendum Inventory for the San Luis Transmission Project (SLTP), Alameda and Merced Counties, California* (Ballard et al., 2015).

The analysis presented here and in Section 4 seeks to fulfill the responsibilities of Western under NEPA and Section 106 of the National Historic Preservation Act (NHPA), 16 U.S.C. § 470, and the Authority's responsibilities under CEQA.

Under Section 106 of NHPA, Western is responsible for considering the impact of any project on cultural resources that are listed on or eligible for listing on the National Register of Historic Places (36 CFR Part 800). To fulfill this responsibility, Western must, in consultation with the California State Historical Preservation Officer (SHPO) and any interested Native American Tribes, identify the area of potential effect of the undertaking, identify any National Register eligible resources within the area of potential effect, and assess the potential effects to the identified resources. To resolve any adverse effects, Western must prepare a Memorandum of Agreement or Programmatic Agreement with the SHPO setting out the measures that Western will take to avoid, minimize, or mitigate the adverse effects (ACHP, 2013). For further description of Section 106 and the NHPA, refer to Section 3.5.1.2.

As the State lead agency, the Authority is tasked with carrying out the environmental impact analysis pursuant to CEQA. This includes identifying the environmental impacts of proposed projects, determining if the impacts will be significant, and identifying alternatives and mitigation measures that will substantially reduce or eliminate significant impacts to the environment. Any cultural resources within the project area must be identified, evaluated for their eligibility for listing on the California Register of Historical Resources, and any impacts to eligible resources must be identified and mitigation designed to reduce those impacts (OHP, 2013). For further description of CEQA, refer to Section 3.5.1.2.

Methods

Cultural resources specialists conducted a study consisting of a detailed Class I records review and an intensive Class III pedestrian survey. These efforts are detailed in Holm et al., 2014a; Holm et al., 2014b; and Ballard et al., 2015; the following discussion is based on those documents.

Records Search and Archival Research

The Class I inventory is a summary of literature, records, and other documents that describe the cultural resources within the Project study area. The Class I inventory study area encompassed a one-quarter-mile buffer surrounding the Proposed Project and alternative corridors. The Proposed Project and alternative corridors are between 300 to 500 feet wide, but reach a maximum width of more than 3,500 feet in some locations. The first inventory was performed in March and April 2014. A second inventory of areas not covered by the first inventory was performed in April 2015 (Ballard et al., 2015; Holm et al., 2014a).

Pedestrian Survey

Cultural resources surveys of the accessible portions of the Proposed Project and alternative corridors were conducted in May and June 2014 and in April 2015. A total of 2,842 acres of the Proposed Project corridor were subject to intensive, full coverage pedestrian surveys and an additional 441 acres were subject to opportunistic survey (survey conducted to the greatest extent feasible given topographic constraints). Within the alternative corridors, 2,724 acres were subject to full-coverage surveys and an additional 369 acres were subject to opportunistic survey. A total of 3,749 acres were not surveyed due to issues accessing particular parcels within the Proposed Project and alternative corridors.

Cultural Resources Categories

Four broad types of resources are considered in this EIS/EIR: prehistoric archaeological resources, historic period archaeological resources, built-environmental resources, and ethnographic resources. Two numbering systems for cultural resources are used in California: the trinomial system featuring the state abbreviation followed by a three letter abbreviation of the county and a sequential number (e.g., CA-MER-94) and the P-number system, composed of a P followed by a numerical county indicator and then a sequential number (e.g., P-24-001931). Most archaeological and some built environment resources have identifiers assigned in both numbering systems.

Prehistoric archaeological resources are places that have preserved the signs of Native American life before contact with Europeans and Euro-Americans in the 1770s. The activities preserved in these resources are broad and may include rituals, food acquisition and preparation, quarrying stone, and building shelter. Prehistoric resources can consist of lithic scatters/workshops, groundstone scatters, habitation sites or temporary camps, prehistoric trails, stone quarries, bedrock milling features, rock art, architectural features, and rock features. Additionally, they may contain human remains in the form of burials, cairns, or cremations.

Historic period archaeological resources are places that have preserved the signs of the lives and activity of people who lived in America between 1769 AD and 50 years before the present. Like prehistoric archaeological resources, historic period archaeological resources often occur around where people lived, but also include the remains of industrial, agricultural, recreational, and waste management activities. These can be surface features, subsurface features, or the byproducts of activities such as food preparation or mining.

Built-environment resources were constructed at least 50 years before the present. The most obvious are historic-era buildings, but also include structures and objects.

Ethnographic resources are those places that have importance within a particular culture or are tied to important historical events. Generally these places are of importance to people in the present even though they reflect aspects of local, state, or national history, are tied to particular people, or to the

mythology and traditions of particular cultures. One type of ethnographic resource is the Traditional Cultural Property (TCP). They are most commonly associated with Native American cultures but also include areas important to other social groups.

Environmental and Cultural Settings

Environmental Setting

The SLTP study area crosses through several physiographic provinces and biotic communities. The two main provinces are the San Joaquin Valley, a vast alluvial plain that is drained by the San Joaquin River, and the Diablo Range Foothills. This range is the portion of the California Coast Ranges that extends from the Carquinez Strait in the north to Orchard Peak in the south. It is bordered by the San Joaquin Valley to the east and the Santa Clara Valley to the west. The northern end of the San Joaquin Valley contains part of the San Joaquin–Sacramento Delta, a large inland delta formed by the confluence of the San Joaquin and Sacramento Rivers. The portion of the San Joaquin Valley surrounding the SLTP study area is primarily characterized by the Valley grassland vegetation community that consists of an open area covered with bunchgrasses and with occasional oak trees. It also includes limited areas near streams and rivers featuring riparian woodlands and freshwater marshes. Like the adjacent portions of the San Joaquin Valley, the Diablo Range Foothills are dominated by Valley grassland, with occasional riparian woodlands.

Prehistoric Setting

Prehistoric archaeologists use many different terms to categorize and interpret units of past cultural, technological, or functional diversity. Terms for interpretive units in the prehistoric era are used inconsistently across California and in many cases overlap. Three common terms are used in this analysis to refer to these units of the prehistoric past: period, pattern, and complex. A “period” is a span of time that has a beginning and an end defined by significant changes in the archaeological record (Society for California Archaeology, 2014). A “pattern” is a cultural shared by a number of different cultures within a geographic region that exists over an appreciable period of time. It is characterized by the use of similar technologies, economies, and burial practices (Bennyhoff and Fredrickson, 1994). A “complex” is a unit that has distinct types of artifacts and is found within a certain area during a particular time (Society for California Archaeology, 2014). In this document, a complex can be understood to be a local expression or regional variation of a larger pattern.

Californian Native Americans within the Central Valley developed a sophisticated material culture, became central figures within an extensive trade system incorporating distant and neighboring regions, and achieved population densities equaled only by agricultural societies in the American Southwest and Southeast. In this area, prehistory is generally broken up into five periods: the Paleo-Indian Period (13,500–10,500 before present [BP]), the Lower Archaic Period (10,500–7,500 BP), the Middle Archaic Period (7,500–2,500 BP), the Upper Archaic Period (2,500–850 BP), and the Emergent Period (850–150 BP).

Paleo-Indian Period (13,500–10,500 BP)

The best available archaeological evidence indicates that the earliest inhabitants of North America arrived sometime around 13,500 years ago. Evidence for Paleo-Indian occupation of the San Joaquin Valley comes primarily from isolated finds of fluted projectile points, including one point collected from Merced County (CA-MER-215, the Wolfsen Mound) near Newman several miles east outside of the SLTP project area. Evidence for early human occupation within the San Joaquin Valley remains sparse, though recent studies have highlighted the potential to encounter Paleo-Indian sites in buried Late

Pleistocene deposits that have been subject to repeated episodes of deposition and erosion. No Paleo-Indian period resources were identified in the SLTP study area.

Lower Archaic Period (10,500-7,500 BP)

A change in the climate towards wetter, warmer weather at the end of the Pleistocene caused a period of increased runoff and higher water flows from storms and glacial melting. This runoff accelerated erosion in the foothills, producing alluvial fans, cone-shaped depositions of sediment at the base of streams, and floodplains, large accumulations of sediment from streams and river flows in the San Joaquin Valley, beginning around 11,000 BP. These formations resulted in a large amount of soil accumulating over the original ground surfaces of the late Pleistocene and early Holocene. A second episode of fan and floodplain deposition occurred at the beginning of the middle Holocene, around 7500 years B.P., presumably covering the majority of earlier Lower Archaic archaeological resources in the San Joaquin Valley. This made evidence for the Lower Archaic Period occupation of the San Joaquin Valley relatively sparse and mostly represented by isolated finds such as stemmed projectile points, flaked stone crescents, and steep-edged, flaked stone tools found along the shores of Tulare Lake in Tulare County. Although little evidence for milling or plant processing tools has been recovered from Lower Archaic Period valley basin assemblages, investigations in the eastern Diablo Range foothills have revealed extensive signs of early plant processing. Lower Archaic Period sites in the Diablo Range foothills were seasonally occupied and contain abundant groundstone milling tools such as handstones and milling slabs. The distinct foothill and valley basin cultural traditions and adaptations seen in Middle Archaic Period sites emerged during the Lower Archaic Period. No Lower Archaic period resources were identified in the SLTP study area.

Middle Archaic Period (7,500-2,500 BP)

The Middle Archaic Period was generally a time of warmer, dryer climatic conditions and many of the large, rain-fed lakes that hunter-gatherers relied on gradually receded or disappeared. At the same time, alluvial fans and floodplains stabilized, and the extensive wetland habitat of the Sacramento–San Joaquin River Delta formed as rising sea levels pushed inland. During the Middle Archaic Period, the patterns of settlement and the reliance on different foods became distinct between foothill and valley floor populations. Foothill sites generally contain abundant groundstone tools for chopping, scraping, and pounding along with plant remains dominated by acorns and pine nuts. Projectile points included notched, stemmed, thick-leaf, and narrow concave base darts with a high degree of local and regional variability.

In contrast to the eastern foothills of the Diablo Range, comparatively few Middle Archaic Period sites within the San Joaquin Valley basin have been discovered, largely because of more recent soil deposition and urban and agricultural development. Sites associated with the later part of the Middle Archaic Period (ca. 4,500 BP) are more common. These sites have yielded elaborate and diverse assemblages of artifacts that reflect complex societies focused on resources available along rivers and in marshes, called the Windmill Pattern. One of the important markers of Windmill Pattern sites is burials where people are in an extended position facing west. This pattern has been identified near the SLTP study area at sites including the Menjoulet Site (CA-MER-3), located between the Proposed Project and the Billy Wright Road Alternative corridors, in the Los Banos Reservoir.

In the area surrounding the SLTP corridors, two cultural complexes have been identified: the Positas Complex (5,250-4,550 BP) and the Pacheco Complex (4,550-1,650 BP). The Positas Complex was distinguished by small mortars and short, cylindrical pestles, as well as millingslabs, perforated flat cobbles, and beads made by removing the tip of the *Olivella* shell. The beginning of the Pacheco Complex, referred to as Pacheco A (4,550-3,550 BP) is marked by leaf-shaped projectile points, rectangular *Haliotis* pendants, and thick beads from the wall of *Olivella* shells. The latter part, Pacheco B (3,550-1,650 BP),

was characterized by a large number of *Olivella* shell beads, bone awls, stemmed and side-notched projectile points; and abundant millingslabs, mortars, and pestles. Both the Positas and the Pacheco complexes were first identified at the Grayson Site (CA-MER-94), located approximately 5 miles west of the SLTP under the San Luis Reservoir. Resources identified within the SLTP study area may date to the Middle Archaic period.

Upper Archaic (2,500-850 BP)

Climatic conditions became cooler and wetter during the early Upper Archaic Period. The lakes that had receded during the Middle Archaic Period returned to their former levels. Increased soil deposition and formation also occurred, capping many earlier soils and land surfaces. The Upper Archaic Period was complex, with many social and political groups that developed their own variations of burial and artifact styles. These included bone tools and ornaments, widespread manufacture and distribution of *Olivella* beads and *Haliotis* ornaments, obsidian stone tool blanks produced from eastern Sierra Nevada Mountain obsidian sources, ceremonial blades, and charmstones. In the Delta and portions of the Sacramento and San Joaquin valleys, mortars and pestles became more common in the archaeological record, indicating a heavier reliance on acorns, while along the valley margins handstones and millingslabs appear in larger numbers, indicating that people were eating a mix of plant foods. Hunting and fishing focused on bulk processing of salmon, shellfish, rabbits, and deer or elk. A new cultural pattern, the Berkeley Pattern appeared in the Delta and adjacent Diablo Range foothills. The Berkeley Pattern included new projectile point styles, flexed burial positions, and extensive accumulations of habitation debris reflecting long-term occupation of the same villages, built on mounds. In addition to the differences in burials and artifact styles, the people of the Berkeley Pattern appear to have been more focused on eating acorns and terrestrial hunting, compared to the wetland, river, and stream focus of the Windmill diet. The appearance of the Berkeley Pattern may indicate the arrival of new populations into the area, likely speaking different languages than the Windmill Pattern populations.

In some areas, the Windmill Pattern was replaced by the Berkeley Pattern, but persisted within the San Joaquin Valley along the western and southern edges of the Delta and along the streams and marshes of Merced County. Representative sites include CA-MER-3 and CA-MER-215, located within several miles of the SLTP in Merced County. The western margins of the San Joaquin Valley appear to have been a transitional area, featuring cemeteries with flexed burials at CA-MER-94 (under the western portion of the San Luis Reservoir) or extended burials at CA-MER-3 (near the San Luis Dam), indicating the area was alternatively occupied by groups originating in the Valley and the Diablo Range. The local Upper Archaic Period sequence in the general area the SLTP passes through is called the Gonzaga Complex (1,650-950 BP), first identified at the Grayson Site (CA-MER-94), located approximately 5 miles west of the SLTP under the San Luis Reservoir. The Gonzaga Complex is primarily known from funerary sites and was marked by a mix of extended and flexed human burials; bowl mortars; squared and tapered-stem projectile points; grass saws; circular, oval, or teardrop shaped *Haliotis* ornaments; and thin rectangular, split-punched, and oval *Olivella* beads. Resources identified within the SLTP study area may date to the Upper Archaic period.

The Emergent Period (850-150 BP)

The climatic conditions of the Emergent Period were generally similar to those of the present, but there were also periods of flooding, drought, and increased soil deposition. By the Emergent Period, California Native Americans living within the San Joaquin Valley had developed the cultural traditions that would be noted at the time of European contact. These traditions included technological adaptations such as the bow and arrow and the fish weir. Native trade networks also changed during the Emergent Period, as shell beads filled the role of currency throughout much of the region. Large, populous villages

developed along river courses to access seasonally abundant salmon runs, while smaller villages and residential communities continued to grow along the many side streams of the foothills and along the river channels and sloughs of the San Joaquin Valley floor.

In the region surrounding the SLTP, the Panoche Complex (450-100 BP) is the cultural system associated with the Emergent Period. This complex was first identified at the Grayson Site (CA-MER-94), located approximately 5 miles west of the SLTP under the San Luis Reservoir. Although the Panoche and Gonzaga complexes have been documented through a number of sites, there appears to have been a hiatus of approximately 500 years between them both. That lapse may be due to a period of unfavorable climatic conditions that could not support oaks and the people who depended on acorns for food. The Panoche Complex is linked with the wider Augustine Pattern that appears across much of Northern California in the Emergent Period. This pattern is essentially the way of life observed in the contact period, with people living in a system of large central villages that housed most of the population and local leaders surrounded by smaller villages and areas for particular hunting, gathering, and other activities. Characteristics of the Panoche Complex include the remains of large, circular dance houses; flexed burials and cremations; milling slabs; varied mortar and pestle types; bone awls, saws, whistles, and tubes; side-notched projectile points; clamshell disk beads; *Haliotis* disk beads; and *Olivella* lipped, side-ground, and rough disk beads.

Early accounts suggest that Pacheco Pass and the area around the San Luis Reservoir had been largely abandoned by local California Native Americans by the early 19th century, likely due to increased Spanish, Mexican, and American use of the pass. Bands of cattle and horse thieves frequently used Pacheco Pass and Spanish military expeditions also made incursions into the area in search of runaway mission neophytes. Collectively, these pressures proved too much for the local Native inhabitants who largely fled the vicinity by the 1840s and early 1850s. Resources identified within the SLTP study area may date to the Emergent period.

Ethnographic Setting

The SLTP falls within the traditional territory of the Northern Valley Yokuts. The Northern Valley Yokuts generally inhabited the territory extending from the crest of the Diablo Range in the west to the foothills of the Sierra Nevada Mountains in the east and from the San Joaquin River near Mendota in the south to the area midway between the Calaveras and Mokelumne rivers in the north. The San Joaquin Valley contained a population of over 40,000 people at the time of European contact.

The Yokuts were hunter-gatherers who divided themselves into kin and language-based groups, known as tribelets. The headman or chief of each tribelet lived in a centrally located village while most of the other members of the tribe lived in smaller, surrounding villages. Most of the Northern Valley Yokuts lived in the center or eastern parts of the San Joaquin Valley, with the SLTP vicinity less densely occupied. Villages were located along watercourses such as Los Banos and Panoche creeks. Settlements consisted of large, semi-subterranean round or oval dwellings with hard-packed floors, typically on high ground or piled earthen mounds constructed along water courses. Ceremonial sweat houses and assembly chambers were present in large central villages. These villages could hold over 200 inhabitants who lived there most of the year, with short periods of seasonal resource collecting trips.

The main foods for the Northern Valley Yokuts were local plants and animals typically found near water, as well as acorns and grass seeds. Freshwater fish available year-round and seasonal runs of spawning ocean fish were caught using weirs, nets, basketry fish traps, and bone- and antler-tipped harpoons. Birds following the Pacific Flyway were commonly hunted. Although elk, deer, rabbits, and other mammals were hunted, these animals appear not to have been an important part of the diet. In addition to

acorns, an array of seeds, roots, and corms were collected, processed, and consumed or stored. The Yokuts systematically tended the landscapes through routine pruning, brush clearance, and prescribed burns that improved the quality and quantity of plant yields.

Although the Northern Valley Yokuts were the predominant group in the region, there was interaction with neighboring hunter-gatherer groups, including Mutsun Ohlone-speaking groups of the Diablo Range and Monterey Bay and the Miwok-speaking groups of the northern Delta and Sierra Nevada foothills. This gave access to materials that do not occur naturally in the region, including shell from the Pacific Coast and obsidian from the Sierra Nevada and North Coast Ranges. The Pacheco Pass and the San Joaquin River were both corridors where this trade and contact regularly happened.

During the Mission Period (ca. 1776-1830s), large numbers of Northern Valley Yokuts were removed to Spanish missions in the San Francisco Bay Area, although many actively resisted the missions, fleeing into the tule marshes or raiding mission property. Like most Native Californian communities, Northern Valley Yokuts populations declined dramatically as they were decimated by epidemic diseases and missionization in the late 18th and early 19th century and again by the influx of American settlers in the mid-19th and 20th centuries. Today, however, several Yokuts communities persist and several have been federally recognized as extant, sovereign tribes. Six federally recognized tribes include Yokuts people in their modern membership: the Tule River Indian Tribe, the Santa Rosa Rancheria, the Picayune Rancheria of Chukchansi Indians, the Table Mountain Rancheria, the Tejon Indian Tribe of California, and the Tuolumne Band of Me-Wuk Indians. None of these tribes currently possess land in any of the four counties that SLTP runs through. However, any of them may have members who trace their ancestry back to the area and the Northern Valley Yokuts.

Historic Setting

Spanish Period (AD 1542-1821)

The historic period within Central California began when the Spanish expanded their frontier northward into California. A number of expeditions took place, largely aimed at identifying sites for the establishment of missions. Using a tripartite system of military forts called presidios, Catholic missions, and secular towns called pueblos, the Spanish government rapidly established a network of settlements from San Diego to San Francisco. In 1777, Misión Santa Clara de Asís and El Pueblo de San José were established in the southern San Francisco Bay, the largest Spanish period settlements near the SLTP. Exploration of the northern San Joaquin Valley only began with the Gabriel Moraga expeditions of 1806 and 1808. The 1806 expedition started in San Juan Bautista, explored portions of the San Joaquin River, and headed north, crossing the Merced and Stanislaus rivers before proceeding to the Mokelumne River. The 1808 expedition started from San José, carried out further explorations of the San Joaquin River, and then veered south to the Merced River. In 1811, Father Ramon Abella explored the San Joaquin River north into modern San Joaquin County.

Two main north-south travel routes linked Spanish Period missions and settlements. The coastal route, El Camino Real, eventually linked the chain of missions from San Diego to San Francisco. The interior route, El Camino Viejo, ran north from Los Angeles along the western edge of the San Joaquin Valley to the Patterson Pass near the present Tracy before turning west to Oakland. El Camino Viejo was used to transport livestock during the Spanish Period and during the Mexican Period. It passes through all four counties encompassing the SLTP project area. The El Camino Viejo likely paralleled the Proposed Project corridor and may have overlapped with the SLTP study area near the San Luis Reservoir in Merced County. The 1806 Moraga expedition also marked the historic period use of Pacheco Pass, an east-west

trending Native Californian trail that became an important historic period transportation route connecting the San Joaquin Valley to the coast via the town of San José.

Perhaps 30 land grants were issued to individual settlers during the Spanish Period, mainly located along the coast and in coastal valleys. Settlement within the Central Valley was sparse during the Spanish Period, generally associated with water locations along El Camino Viejo. One of the stopping points for water along El Camino Viejo was at El Arroyo de San Luis Gonzaga at Rancho Centinela just east of what is now the San Luis Reservoir in Merced County. Rancho Panocha de San Juan y los Carrisalitos, located in southwestern Merced County, also may have been occupied during the Spanish Period. Present day San Joaquin County apparently remained unsettled by the Spanish, though several 18th century expeditions documented contact with Native Californian villages.

The mild Mediterranean climate, abundant grasslands, and numerous creeks and rivers provided excellent conditions for ranching Spanish breeds of cattle, sheep, and horses. As a result, livestock and the hide and tallow trade became central to the economy of Alta California under Spanish and later Mexican rule. As livestock herds grew, they were parceled out to mission ranches and presidio pastures. Rangelands were not fenced and, as the herds grew, some of the unfenced livestock would scatter and turn feral. Wild herds of cattle and horses spread over large areas of the Diablo Ranges and the San Joaquin Valley. The western edge of the San Joaquin Valley, including those lands in the SLTP vicinity, would have been used mainly as grazing land during the Spanish Period.

Mexican Period (1821-1848)

Mexico gained independence from Spain in 1822, and Alta California became a part of the Mexican frontier. By the 1830s, the Mexican Government began to colonize their northern frontier. Mission lands were granted as ranchos to citizens of Alta California as a reward for loyal service. Beginning with the Jedediah Smith expedition in 1827, groups of American and British Canadian trappers and explorers began to cross over the Sierra Nevada and Cascade Mountains into the interior Central Valley to explore the region. One of these groups was likely the source of an 1831-1833 disease outbreak that killed over 60,000 Native Californians in the Central Valley. The 1844 Frémont expedition passed close to the SLTP vicinity as they travelled south across the Stanislaus and Merced rivers.

American forays into Mexican territory occurred in tandem with livestock raids conducted by Central Valley Miwok and Yokuts tribes during the 1830s and 1840s. These raids led to counter expeditions on the part of Mexican colonists. With increasing raids and territorial unrest, the Mexican Government sought to consolidate their hold over Alta California by granting a string of land grants along the San Joaquin River in present day San Joaquin, Stanislaus, and Merced Counties. These land grants included five near the SLTP study area: Orestimba Rancho, Rancho del Puerto, El Pescador, San Luis Gonzaga, and Panocha de San Juan y Los Carrisalitos. These grants represented an effort to increase the Mexican population with the region and thus solidify their hold over a somewhat unstable portion of their territory. The only rancho that intersected SLTP study area was Rancho San Luis Gonzaga, consisting of 48,000 acres surrounding Pacheco Pass that were granted to Juan Pérez Pacheco and José María Mejía in 1843. This rancho was devoted to cattle grazing and, to a lesser extent, agriculture. An adobe and rancho complex was constructed on the property in 1844 near San Luis Creek, now under the reservoir. During the American Period, the ranch became San Luis Ranch and continued to be held by the Pacheco family until 1962. The adobe served as a stage stop, café, and gas station before it was moved and largely destroyed in advance of construction of the San Luis Reservoir in 1962.

The Mexican Period economy focused on livestock ranching with little irrigated farming. The Mexican settlers received large land grants and appropriated existing mission irrigated fields, livestock, fences,

corrals, irrigation ditches, outbuildings, and other improvements. They tended to plant smaller fields near their adobe homes with subsistence crops, resulting in the decline of large-scale water system features. The emphasis on livestock ranching activities became known as the “hide and tallow trade.” By the 1840s, there were an estimated 150,000 to 200,000 cattle hides exported annually from Alta California. Fences and ditches were used primarily to keep livestock out of rancho vegetable gardens, orchards, and grain fields, but not to mark rancho boundaries. Instead livestock brands were used to separate herds. Fence types included prickly pear cactus hedges and walls made from stone or adobe. During this period, the western edge of the San Joaquin Valley, including those lands in the SLTP vicinity, continued to be used mainly as grazing land.

The Mexican-American War of 1846-1848 ended with the signing of the Treaty of Guadalupe Hidalgo, under which the U.S. annexed California and granted full American citizenship to Mexican citizens.

American Period (1848–Present)

In 1848, James Marshall discovered gold on the American River and the California Gold Rush began. The discovery of gold brought tens of thousands of gold-seekers from around the world, and those prospectors pushed further into the California interior than the Mexican Period settlers who preceded them. The wealth and expanding population of California spurred its speedy ratification as a state in 1850. Due to the rapid influx of settlers into California, legal determination of ownership of lands awarded by Spanish or Mexican authorities was often disputed. The U.S. Government passed the Land Act of 1851, placing the burden of proof-of-ownership on the grantees. As a result, the few California Native Americans who had received grants lost their titles, as did many Hispanic land owners.

The Gold Rush also shaped the course of California’s agricultural landscape and settlement patterns. Not only did the Gold Rush almost instantly create a demand for a wide variety of agricultural foodstuffs, but it also set in motion a wave of settlement aimed at producing commercial food products. In the 1850s, intensive settlement occurred first in San Francisco and Sacramento and extended into the hinterlands as miners flocked to the gold fields. Early settlement in the San Joaquin Valley occurred along streams and rivers. Many of California’s American settlers turned to agriculture as a way to profit due to the high demand for fresh foods.

As the period progressed, land use along the western edge of the San Joaquin Valley in the SLTP vicinity changed. Ranching continued to be important, but less for hides and more for beef and dairy production. With the construction of water systems, irrigated agriculture became common, first in areas of level land, then expanding into hillier areas with orchard crops. Mining and quarrying, while never major industries, did occur within the Diablo Range.

Early Settlements and County Histories. San Joaquin County was one of the initial counties established at statehood. The settlement of Stockton was established in 1847 prior to the Gold Rush and soon became a major transportation hub, serving as a transition point between steamer traffic on the San Joaquin River and mule and wagon traffic to the mines. As grain production within the San Joaquin Valley increased, Stockton became a major shipping hub for farms within the region. Tracy was established (near the SLTP study area) in 1878 when the Southern Pacific Railroad built a branch road to San Francisco by way of Martinez. The road was extended along the west side of Fresno, creating a junction at Tracy. Tracy soon became a terminal railroad point and the laying off place for hundreds of Southern Pacific employees, thus establishing a permanent settlement base. Newman was founded in 1888 around a Southern Pacific railroad station.

The other counties that encompass the SLTP study areas — Alameda, Stanislaus, and Merced Counties — were not among the original 27 counties. Alameda County was created in 1853 from portions of Contra

Costa and Santa Clara counties. The area has long been a transportation corridor between the San Francisco Bay and the San Joaquin Valley. By the 1870s, Vallecitos Road followed the Livermore (now Altamont) Pass through the Diablo Range. An 1878 map of Alameda County shows the small community of Altamont about 5 miles west of the SLTP study area along the Livermore Pass as a railroad stopping point for the Western Pacific Railroad connection with the Transcontinental Railroad. Stanislaus County was established in 1854 and early settlement occurred primarily along the Tuolumne, Stanislaus, and San Joaquin rivers to the east of the SLTP study areas. Those early settlements functioned mainly as mining support towns, but evolved into agricultural communities during the 1870s. Merced County was organized in 1855 and early settlement was concentrated along the eastern side of the San Joaquin River then gradually extended to the west, ultimately encompassing the 19th and early 20th century settlements of Los Banos, Volta, and Gustine, all within 10 miles of the SLTP study area. Los Banos originated as an 1858 stage stop and was moved 5 miles to the east to the current location in 1889 to intersect with the railroad. Volta was established in 1890 along the north-south oriented San Pablo and Tulare Extension Railroad. Gustine, located approximately 5 miles east of the SLTP study area, began as a 1906 subdivision that was meant to rival the town of Newman in neighboring Stanislaus County. Development and industry along the SLTP study area mainly spread from these communities.

The Rise of Agriculture. Agricultural activity during the American Period was characterized by three types of pursuits: cattle and sheep ranching; grain farming; and irrigation agriculture. Cattle and sheep ranching remained dominant until the 1880s. During the 1850s-1870s, free-ranging Spanish cattle were replaced by American breeds of livestock and dairy cows. Initially, in the 1850s, fences were built around agricultural fields to protect them from livestock and to define property and field lines. During the 1850s and 1860s, grain farmers gradually became more dominant in numbers and in agricultural politics. In 1866, a “No Fence” Act was passed to force ranchers to enclose their livestock pasturage, and by the early 1870s it became a statewide requirement.

During the late-19th century, agricultural development in California was pushed by the spread of irrigation, improved transportation, the availability of agricultural labor, and increased mechanization. With the completion of the Transcontinental Railroad in 1869, farmers were able to ship fresh produce to markets in the East, encouraging a shift toward irrigated crops such as fruits, nuts, and vegetables in the 1870s. The transformation in the late-19th century from expansive grain fields and grazing lands to irrigated crops occurred relatively quickly and had profound consequences on the state’s agriculture. The crusade to irrigate much of California played an important role in the expansion of mechanized farming and in the establishment of small farming communities.

Agriculture and ranching remained a substantial element of Alameda, San Joaquin, Stanislaus, and Merced county economies during the early American Period and into the early 20th century. Large scale viticulture and wine production was established during the late 1870s and 1880s. By 1893, there were 156 vineyards in the Livermore Valley area. On the west side of San Joaquin County, spanning the cities of Tracy and Patterson, farmers developed large-scale grain agriculture. Initially, grain crops were shipped from San Joaquin City, but with the establishment of railroads, trains quickly became the preferred mode of transport. The dairy industry became established in the area in the 1870s. By the 1930s, the production of dairy products had become more focused on cheese, butter, and condensed (rather than liquid) milk. Other major crops grown in the area included flax, peas, celery, and lettuce. Patterson, located roughly 3 miles east of the SLTP study area, was a planned agricultural colony settled by Midwestern Scandinavian farmers who primarily pursued dairying and orchard cultivation of apricots, peaches, and nuts.

In Merced County, the San Luis Gonzaga Rancho, held by the Pacheco family since the Mexican Period, transitioned to San Luis Ranch when Juan Perez Pacheco successfully received an American land patent in 1871.

By the late 19th century, the largest cattle ranching concern in Merced County was owned by Henry Miller and Charles Lux. Miller and Lux acquired the Rancho Sanjón de Santa Rita grant, which is located just east of the SLTP study areas. They also leased land from Juan Perez Pacheco to the northwest.

The Development of Water Conveyance Systems. The aridity of the western San Joaquin Valley began to pose problems for American Period agriculture during the late 19th century. Wells were initially used for irrigation, but as groundwater was depleted canal projects were undertaken to move water from the San Joaquin River to the west. Henry Miller built a canal in 1871 from the San Joaquin River to the town of Los Banos and extended it to Los Banos Creek and Newman in subsequent years. The canals provided much of the irrigation for Miller's properties and for local agriculture. In 1887, the California Legislature passed the Wright Act, which formed irrigation districts across California. The Merced Irrigation District was established during the 1870s and 1880s for the eastern side of Merced County and developed many miles of canals.

By the 1920s, the depletion of groundwater reservoirs was a widely recognized problem within the western San Joaquin Valley. During the 1930s, the federal government began the Central Valley Project (CVP), a massive irrigation scheme that involved building dams throughout California. By the 1950s, the west side of the Central Valley had become the focus of both the federal CVP and a newly formed State Water Project (SWP). The area along Pacheco Pass in the Diablo Mountains was identified as the ideal site for the San Luis Reservoir. To avoid the unnecessary expense of parallel aqueducts, California agreed to partner with the federal government in the creation of the San Luis Unit in 1961. The San Luis Reservoir in the Diablo Range west of Los Banos would be filled with water supplied by the federal Delta-Mendota Canal and the state's California Aqueduct; both intersect with the SLTP study area. The Delta-Mendota Canal is part of a federal project that was completed in 1951. The Delta-Mendota Canal was built by the Bureau of Reclamation to replace the diverted water with water from the Sacramento River. The canal spans roughly 117 miles in length and ends at the Mendota Pool. In 1963, construction began on the California Aqueduct, a series of canals, tunnels, and pipelines. Construction of the aqueduct's main line was completed by 1971, with subsequent branches or extensions completed as late as 1997. The SLTP study area begins roughly 1 mile away from the north end of the California Aqueduct at Clifton Court Forebay. The California Aqueduct weaves in and out of the SLTP study areas in San Joaquin, Stanislaus, and Merced Counties.

Transportation Development. Driven largely by local topography, several transportation corridors developed within the SLTP vicinity over time. One such corridor ran roughly north-south along the western side of the San Joaquin Valley. This route was originally the Spanish El Camino Viejo; it became the Southern Pacific Railroad in the 19th century and the Interstate-5 freeway in the 20th century. Two east-west trending transportation corridors also cross the SLTP study areas and pass through the Diablo Range. The first is the Livermore Pass (now the Altamont Pass), located towards the northern end of the SLTP study areas in Alameda and San Joaquin Counties, and the second is the Pacheco Pass, located near the southern end in Merced County.

In Alameda and San Joaquin Counties, several attempts were made to establish a stage line bridging Stockton and Oakland by way of the Livermore Pass. The first short-lived attempt was made by Alonzo McCloud in 1854, a route that would have crossed the SLTP study area somewhere near Tracy. A second stage line that followed roughly the same route was established by Alvin and Samuel Fisher in 1859. Both failed due to competition with steamship lines from Stockton.

Pacheco Pass also served as a main transportation corridor connecting the southern San Francisco Bay Area with the San Joaquin Valley. Although the trail was used prehistorically long before the Mexican Period, it eventually took its name from Juan Pérez Pacheco. In 1857, Andrew Firebaugh built a toll road

across the pass from San José and by 1858 the San Luis Ranch house was acting as a stage station along Firebaugh's toll road. Pacheco Pass also served as a part of the route used by the Butterfield Overland Mail Company, which ran stage lines from San Francisco to St. Louis beginning in 1858. This route is being considered by the National Parks System as a National Historic Trail. The route followed the El Camino Viejo corridor to Pacheco Pass, where it crosses the Project area near San Luis Dam. Stage stations in Merced County near the SLTP included the San Luis Ranch near San Luis Dam and Lone Willow Stage Station near Los Banos.

The development of railroads transformed transportation in the San Joaquin Valley. Railroad routes in the San Joaquin Valley followed roughly the same transportation corridors that were established during the Spanish and Mexican periods. The two main railroads that competed within the region were the Southern Pacific Company and Western Pacific Railroad. In 1876, the first through train from San Francisco arrived in Los Angeles. By 1900, the Southern Pacific Company had become a major railroad with a rail system. The original Western Pacific Railroad was established in 1862 to construct the westernmost portion of the Transcontinental Railroad between the present day cities of Oakland and Sacramento. The route crossed Niles Canyon to Livermore Pass before proceeding on. In 1870, the Western Pacific Railroad was absorbed by the Central Pacific Railroad. In 1903, a second company was founded under the name Western Pacific Railroad. This new company acquired the Alameda and San Joaquin Railroad. Western Pacific constructed a route that ran from Oakland southeast to Niles Canyon before turning northeast towards Carbona and proceeding from there to Sacramento. A 1930 Denver and Rio Grande Western route map also depicted a Tesla branch line extending south from Carbona.

Early 20th century topographic maps depicted three rail line segments crossing the SLTP study area. One of those railroad segments was the Niles and Sacramento line of the Southern Pacific Railroad while the second segment was the Tesla branch line of the Western Pacific Railroad. The third railroad segment was the Patterson and Western Railroad Company line that connected to the Southern Pacific main line at Patterson. The main Southern Pacific Railroad line runs parallel to the SLTP study area, but lies outside to the east.

The Mining Industry. California has been extensively mined for many different ores and minerals throughout its history. The New Almaden mercury deposits and the Tesla coal deposits are located closest to the SLTP study area, but lie outside it to the west. The western portions of San Joaquin, Stanislaus, and Merced Counties were never major mining regions. There were several small-scale mines of manganese, mercury, gypsum, and gravel or sand. Nine small-scale mines intersected or were located near the SLTP study area. Most of these were either located outside the SLTP study area or were recent mines. The only historic period mining operation that overlapped the SLTP study area was a gypsum anhydrite and diatomite mine operated between 1946 and 1951. The mine lies roughly one-quarter mile southwest of the southern segment of the Proposed Project corridor.

3.5.1 Proposed Project

The following section identifies and describes specific cultural resources that could be affected by the Proposed Project. It describes the cultural resources within the Class I and Class III study areas, as defined above under "Methods." Additional subsurface cultural resources may be present that were not identified through surface survey and additional surface resources will likely be present in areas that were not surveyed for this Project. Additionally, future consultation with Native American tribes and other interested groups may identify ethnographic resources such as TCPs and sacred sites.

3.5.1.1 Affected Environment

Resources Present

During the 2014 and 2015 field inventories, 2,842 acres of the Proposed Project corridor were subject to intensive, full coverage survey and a further 441 acres were subject to opportunistic survey. This survey located a total of 15 cultural resources within the corridors for the Proposed Project.

These included portions of three historic period water conveyance systems, three transportation resources, one homestead ranch complex, one utility line resource, and seven livestock related resources. Two previously recorded resources could not be located during the field survey: a bedrock milling feature (P-39-000121) and the buried San Joaquin Pipelines No. 1-3 (P-39-004860) that are present but not observed at the surface.

Six of the resources identified during the field survey had previously been recorded, all of which are historic period infrastructural or agricultural elements. These six resources are:

- the California Aqueduct (P-24-001931),
- the Delta-Mendota Canal (P-39-000089),
- the Byron Bethany Irrigation District Main Canal (No. 9) and associated irrigation ditches (P-01-001445),
- Grant Line Road (P-01-010613),
- the McCabe Road Bridge (P-24-001934), and
- a historic period ranch complex featuring ditches and poured concrete structures (P-50-000427).

None of these six resources are listed on the National Register or California Register, but four have been previously recommended as eligible for listing.

The Byron Bethany Irrigation District Main Canal and associated irrigation ditches (P-01-001445), was found ineligible for listing through survey evaluation in 2001. The three newly recorded segments of this resource appear to retain integrity of location, and also may retain integrity of design, materials, and workmanship. However, it seems likely that these segments also are ineligible for the National Register and the California Register for the same reasons identified in the previous evaluation.

Grant Line Road (P-01-010613) previously was recommended eligible for the California Register; however, the segment examined for this project does not appear to retain integrity of design or workmanship of previously recorded segments. This segment is not recommended as eligible to the National or California registers.

The California Aqueduct (P-24-001931) and the Delta-Mendota Canal (P-39-000089) have been recommended as eligible for listing due to their place in the development of California's water infrastructure.

The McCabe Road Bridge (P-24-001934) was recommended as eligible as a contributing element of the California Aqueduct.

Field evaluation for the historic ranch complex (P-50-000427) recommended the resource as not eligible for listing on the National or California registers.

The buried San Joaquin Pipelines No. 1-3 (P-39-004860) were identified through a records search as being present in the Central Segment of the Proposed Project corridor but were not observed during the 2014 field inventory. All the visible, above surface portions of the pipelines lie outside the SLTP study area. This resource has been recommended as eligible for listing on the National Register and the California Register.

The 11 resources newly identified during the survey of the Proposed Project corridor all date to the historic period and represent infrastructure and agricultural activities. Based on field evaluations, none are recommended as eligible for listing on the National Register and the California Register.

Table 3.5-1. Resources within Proposed Project and National/California Register Status

Corridor	Listed on National or California Registers	Determined Eligible	Determined Not Eligible	Recommended Eligible	Recommended Not Eligible	Not Evaluated
North Segment	0	0	0	2	3	0
Central Segment	0	0	0	1	11	0
San Luis Segment	0	0	0	2	1	0
San Luis Segment 70-kV	0	0	0	1	1	0
South Segment	0	0	0	0	0	0

3.5.1.2 Regulations, Plans, and Standards

Federal

Antiquities Act of 1906 (16 U.S.C. §§ 431-433) authorizes the president to designate national monuments historic landmarks, as well as governing permitting for archaeological work and penalties for violations.

National Historic Preservation Act of 1966 As Amended (NHPA) (16 U.S.C. § 470) requires each state to appoint a State Historic Preservation Officer (SHPO), created the Advisory Council on Historic Preservation (ACHP), and established the National Register of Historic Places (National Register). Sections 106 and 110 of this act have specific bearing on federal agency historic preservation activities and the management of historic properties.

Section 106 of the NHPA requires federal agencies to take into account the effects of their undertakings on properties eligible for listing on the National Register, referred to as “historic properties,” and to afford the ACHP and SHPO a reasonable opportunity to comment on those undertakings. For the purposes of Section 106, an undertaking collectively refers to all projects, activities, or programs funded in whole or in part under the direct or indirect jurisdiction of a federal agency, including those carried out by or on behalf of a federal agency, those carried out by federal financial assistance, those requiring a federal permit, license, or approval, or those carried out on federal property.

Federal agencies must meet their Section 106 responsibilities as set forth in the regulations (36 CFR Part 800). Federal agencies must conduct the necessary studies and consultations to identify cultural resources that may be affected by an undertaking, evaluate cultural resources that may be affected to determine if they are eligible for the National Register (that is, whether identified resources constitute historic properties), and assess whether such historic properties would be adversely affected. Historic properties are resources listed on or eligible for listing on the National Register (36 CFR 800.16[l][1]). A property may be listed in the National Register if it meets criteria provided in the National Register regulations (36 CFR 60.4). Typically such properties must also be 50 years or older (36 CFR 60.4[d]).

The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, or association and:

- A. That are associated with events that have made a significant contribution to the broad patterns of our history; or
- B. That are associated with the lives of persons significant in our past; or
- C. That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess artistic value, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- D. That have yielded, or may be likely to yield, information important in prehistory or history.

Section 110 of the NHPA generally provides that all federal agencies assume responsibility for the preservation and use of historic properties owned or controlled by such agencies. Under Section 110, federal agencies must establish a preservation program for the identification, evaluation, and nomination to the National Register and for protection of historic properties.

Archaeological Resources Protection Act of 1979 (16 U.S.C. §§ 470aa-mm) protects archaeological resources on public and Indian lands. This act applies when a project may involve archaeological resources located on federal or tribal land and requires permitting of archaeological excavation and notification of Indian tribes when sites of cultural or religious importance could be harmed.

Native American Graves Protection and Repatriation Act of 1990 (25 U.S.C. §§ 3001-13) establishes requirements for the treatment of Native American human remains, associated and unassociated funerary objects, sacred objects, and objects of cultural patrimony on federal and tribal land.

Executive Order 11593 Protection and Enhancement of the Cultural Environment (1971) established that federal agencies shall provide leadership in preserving, restoring, and maintaining the historic and cultural environment of the nation.

Executive Order 13007 Indian Sacred Sites (1996) sets forth that in managing federal lands, executive branch agencies shall accommodate Indian religious practitioners' access to and ceremonial use of sacred sites.

Executive Order 13287 Preserve America (2003) established that agencies shall provide leadership in preserving America's heritage by actively advancing the protection, enhancement, and contemporary use of the historic properties owned by the federal government.

Department of Energy Regulations

DOE Policy 141.1: Management of Cultural Resources was implemented to ensure that DOE programs and field elements integrate cultural resources management into their missions and activities and to raise the level of awareness and accountability among DOE contractors concerning the importance of the Department's cultural resource-related legal and trust responsibilities.

DOE Order 144.1: American Indian Tribal Government Interactions and Policy provides direction to officials, staff, and contractors regarding fulfillment of trust obligations and other responsibilities arising from Departmental actions which may potentially impact American Indian traditional, cultural, and religious values and practices; natural resources; and treaty rights and other federally recognized and reserved rights.

State

California Environmental Quality Act (Public Resources Code § 21000, et seq.) (1970). Historical and archaeological resources are afforded consideration and protection by the California Environmental Quality Act (CEQA) (14 CCR Section 21083.2, 14 CCR Section 15064). CEQA Guidelines define significant cultural resources under two regulatory designations: historical resources and unique archaeological resources.

A *historical resource* is defined as a “resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the CRHR”; or “a resource listed in a local register of historical resources or identified as significant in a historical resource survey meeting the requirements of Section 5024.1(g) of the Public Resources Code”; or “any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California, provided the agency’s determination is supported by substantial evidence in light of the whole record” (14 CCR Section 15064.5[a][3]). While TCPs and cultural landscapes are not directly called out in the state definitions of historical resources, TCPs are places and cultural landscapes are areas, and places and areas are included as types of historical resources. Historical resources that are automatically listed in the California Register include California historical resources listed in or formally determined eligible for the National Register and California Registered Historical Landmarks from No. 770 onward (PRC 5024.1[d]). Locally listed resources are entitled to a presumption of significance unless a preponderance of evidence in the record indicates otherwise.

Under CEQA, a resource is generally considered historically significant if it meets the criteria for listing in the California Register. A resource must meet at least one of the following four criteria (PRC 5024.1; 14 CCR Section 15064.5[a][3]):

1. It is associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States;
2. It is associated with the lives of persons important to local, California or national history;
3. It embodies the distinctive characteristics of type, period, region or method of construction, or represents the work of a master or possesses high artistic values;
4. It has yielded or has the potential to yield information important to the prehistory or history of the local area, California or nation.

Historical resources must also possess integrity of location, design, setting, materials, workmanship, feeling, and association (14 CCR 4852[c]).

An archaeological artifact, object, or site can meet CEQA’s definition of a *unique archaeological resource*, even if it does not qualify as a historical resource (14 CCR 15064.5[c][3]). An archaeological artifact, object, or site is considered a unique archaeological resource if “it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria (PRC 21083.2[g]):

- Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.
- Has a special and particular quality such as being the oldest of its type or the best available example of its type.
- Is directly associated with a scientifically recognized important prehistoric or historic event or person.”

Within California state law, cultural resources are defined as buildings, sites, structures, or objects, each of which may have historical, architectural, archaeological, cultural, and/or scientific importance. All resources nominated for listing in the California Register of Historic Resources (California Register) must have integrity; the authenticity of a historical resource's physical identity evidenced by the survival of characteristics that existed during the resource's period of significance. Therefore, resources must retain enough of their historical character or appearance to convey the reasons for their significance. Integrity is evaluated with regard to the retention of location, design, setting, materials, workmanship, feeling, and/or association. It must also be judged with reference to the particular criteria under which a resource is proposed for nomination (Calif. PRC §5024.1).

CEQA Guidelines, California Code of Regulations Title 14, Section 15064.5. When an initial study identifies the existence of, or the probable likelihood of, Native American human remains within the project, a lead agency shall work with the appropriate Native Americans as identified by the Native American Heritage Commission (NAHC). The applicant may develop an agreement for treating or disposing of, with appropriate dignity, the human remains and any items associated with Native American burials with the appropriate Native Americans identified as the Most Likely Descendant (MLD) by the NAHC.

Public Resources Code (PRC), Section 5024, et seq. requires that each state agency develop policies for the preservation and maintenance of all state-owned historical resources or historic properties under its jurisdiction. Each state agency is required to submit updates to their an inventory of all state-owned structures over 50 years of age under its jurisdiction listed in or which may be eligible for inclusion in the National Register or registered or which may be eligible for registration as a state historical landmark. These inventories are used to create a master list maintained by the State Office of Historic Preservation (OHP).

Public Resources Code (PRC), Section 5097.9 et seq. (1982) establishes that both public agencies and private entities using, occupying, or operating on state property under public permit, shall not interfere with the free expression or exercise of Native American religion and shall not cause severe or irreparable damage to Native American sacred sites. This section also creates the Native American Heritage Commission (NAHC), charged with identifying and cataloging places of special religious or social significance to Native Americans, identifying and cataloging known graves and cemeteries on private lands, and performing other duties regarding the preservation and accessibility of sacred sites and burials. This section also includes requirements for landowners to limit further development activity on property where Native American human remains are found until that landowner confers with NAHC-identified most likely descendants to consider treatment options. It enables those descendants, within 48 hours of notification by the NAHC, to inspect the discovery site and recommend to the landowner or the person responsible for the excavation the means to treat or dispose of the human remains and any associate grave goods with dignity. In the absence of most likely descendants, or of a treatment acceptable to all parties, the landowner is required to reinter the remains elsewhere on the property in a location that will not be disturbed. Finally, this section makes it a felony to remove Native American artifacts or human remains from a Native American grave or cairn, as well as to acquire, possess, sell, or dissect Native American remains, funerary objects, or artifacts from a Native American grave or cairn and establishes the repatriation of these remains, funerary objects, and associated grave artifacts as state policy (PRC, Section 5097.9, et seq.).

Local

Alameda County

Alameda County General Plan. The East County Area Plan portion states that it is a goal of the County to protect cultural resources from development and establishes policies and an implementation program to further that goal. This includes identifying cultural resources and avoiding or mitigating impacts to them during development. (Alameda County, 2000).

Alameda County's Historic Preservation Ordinance. This ordinance sets forth Alameda County's policies and procedures for the identification, protection, and preservation of significant architectural, historic, prehistoric and cultural structures, sites, resources and properties in the County. (Alameda County, 2012).

San Joaquin County

San Joaquin County General Plan, Volume I, Section IV.H. This section establishes the County's objective for the protection of the architectural, historical, archaeological, and cultural resources of San Joaquin County.

Historic Resource Preservation (San Joaquin County Development Title 9-1053). The intent of this chapter is to establish regulations for the preservation of historic resources, such as cultural, archaeological, architectural, aesthetic, and environmental resources, within San Joaquin County.

Stanislaus County

Goal Eight of the General Plan sets forth the county's goal of preserving areas of national, state, regional and local historical importance. To do this, Policy Twenty-Four includes measures that state that the county will use the CEQA process to protect archaeological and historical resources and cooperate with local historical societies and archaeological organizations as well as with the SHPO and OHP.

Merced County

The Merced 2030 General Plan contains a number of policies that apply to Cultural Resource impacts in conjunction with ultimate build-out of the City in accordance with the General Plan. The specific policies listed below contained in the Sustainable Development of the General Plan are designed to ensure that cultural resource impacts are minimized as development occurs in accordance with the Merced Vision 2030 General Plan.

3.5.2 Corridor Alternatives

The following section identifies and describes specific cultural resources that could be affected by the alternatives. It describes the cultural resources within the Class I and Class III study areas, as defined above under Methods. Additional subsurface cultural resources may be present that were not identified through surface survey and additional surface resources will likely be present in areas that were not surveyed for this Project. Additionally, future consultation with Native American tribes and other interested groups may identify ethnographic resources such as TCPs and sacred sites. Some cultural resources are located within multiple corridors, thus the total resources identified during survey are not an additive total of those in the Proposed Project and the alternatives.

Table 3.5-2 summarizes the number of resources encountered within the alternatives study area and presents their National/California register eligibility status. Note that these numbers are not additive as single resources were recorded in multiple alternatives. It was not possible to survey the entire area within the alternative corridors due to issues related to access and topography. Additional detail on these resources is provided in the following sections.

Table 3.5-2. Resources within Project Alternatives and National/California Register Status

Corridor	Listed on National or California Registers	Determined Eligible	Determined Not Eligible	Recommended Eligible	Recommended Not Eligible	Not Evaluated
Patterson Pass Road	0	0	0	1	9	2
Butts Road Alternative	0	0	0	1	0	0
West of Cemetery	0	0	0	0	0	0
West of O'Neill Forebay 70-kV	0	0	0	2	0	0
San Luis to Dos Amigos	0	0	0	0	0	0
Billy Wright Road	0	0	0	0	1	0

3.5.2.1 Patterson Pass Road Alternative

The affected environment for the Patterson Pass Road Alternative is similar to that of the Proposed Project. It differs only in the resources present. As of September 2014, one resource eligible for listing on the National Register and California Register has been identified as present in the Patterson Pass Road Alternative corridor: the San Joaquin Pipelines No. 1-3 (P-39-004860). This resource was not observed on the surface, but is known to be present. Two resources have not been evaluated for eligibility to the National Register and California Register: a multicomponent site consisting of both prehistoric and historic period elements and a prehistoric site. An additional nine cultural resources were newly identified by surveys within the Patterson Pass Road corridor and were recommended not eligible for the National Register and California Register based on field evaluation. Within this alternative corridor, a total of 2046.3 acres was surveyed for SLTP for the presence of cultural resources, or 72 percent of the total 2858.8 acres.

3.5.2.2 Butts Road Alternative

The affected environment for the Butts Road Alternative is similar to that of the Proposed Project. It differs only in the resources present. As of September 2014, one resource eligible for listing on the National Register and California Register has been identified: the California Aqueduct (P-24-001931). This resource was also present in the Proposed Project corridor. Within this alternative corridor, a total of 477.9 acres was surveyed for SLTP for the presence of cultural resources, or 43 percent of the total 1006.8 acres.

3.5.2.3 West of Cemetery Alternative

The affected environment for the West of Cemetery Alternative is similar to that of the Proposed Project. It differs only in the resources present. As of September 2014, no resources have been identified in the West of Cemetery Alternative corridor. Within this alternative corridor, a total of 424.8 acres was surveyed for SLTP for the presence of cultural resources, or 36 percent of the total 1166.2 acres.

3.5.2.4 West of O'Neill Forebay 70-kV Corridor Alternative

The affected environment for the West of O'Neill Forebay 70-kV Alternative is similar to that of the Proposed Project. It differs only in the resources present. As of September 2014, two resources eligible for listing on the National Register and California Register have been identified as present in the San Luis to O'Neill 70-kV Alternative corridor: the California Aqueduct (P-24-001931) and the McCabe Road

(P-24-001934). Within this alternative corridor, a total of 271.5 acres was surveyed for SLTP for the presence of cultural resources, or 51 percent of the total 536.1 acres.

3.5.2.5 San Luis to Dos Amigos Alternative

The affected environment for the San Luis to Dos Amigos Alternative is similar to that of the Proposed Project. It differs only in the resources present. As of September 2014, no resources were identified in the San Luis to Dos Amigos Alternative. Within this alternative corridor, a total of 394.1 acres was surveyed for SLTP for the presence of cultural resources, or 55 percent of the total 710.0 acres.

3.5.2.6 Billy Wright Road Alternative

The affected environment for the Billy Wright Road Alternative is similar to that of the Proposed Project. It differs only in the resources present. As of April 2015, two cultural resources were newly identified by surveys within the Billy Wright Road corridor and were recommended not eligible for the National Register and California Register based on field evaluation. Within this alternative corridor, a total of 159.0 acres have been surveyed for the presence of cultural resources, or 40 percent of the total 394.3 acres.

3.6 Environmental Justice

3.6.1 Proposed Project

3.6.1.1 Affected Environment

On February 11, 1994, President Bill Clinton issued Executive Order 12898 titled “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations” (59 Fed. Reg. 7629). This Executive Order 12898 was designed to focus attention on environmental and human health conditions in areas of high-minority populations and low-income communities and to promote non-discrimination in programs and projects substantially affecting human health and the environment. Executive Order 12898 requires agencies to identify and address disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and/or low-income populations.

In response to Executive Order 12898, DOE prepared and issued its Environmental Justice Strategy in 1995. Since then, the agency has conducted a series of activities to implement the Strategy. Both the Executive Order and the Strategy require that DOE establish and maintain an integrated approach for identifying, tracking, and monitoring environmental justice. DOE defines environmental justice as “fair treatment and meaningful involvement of all people, regardless of race, ethnicity, culture, income, or education level with respect to development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that racial, ethnic, or socioeconomic groups should not bear a disproportionate share of negative environmental consequences resulting from industrial, municipal, and commercial operations, or from the execution of federal, state, and local laws, regulations, and policies” (DOE, 2008).

According to the Council on Environmental Quality (CEQ) Environmental Justice Guidance Under the National Environmental Policy Act (CEQ, 1997), “minority populations should be identified where either: (a) the minority population of the affected region exceeds 50 percent or (b) the minority population percentage of the affected region is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis.” The same document advises the use of Census poverty thresholds to identify low-income populations.

Additionally, the CEQ (CEQ, 1997) guidance advises that “In order to determine whether a proposed action is likely to have disproportionately high and adverse human health or environmental effects on low-income populations, minority populations, or Indian tribes, agencies should identify a geographic scale, obtain demographic information on the potential impact area, and determine if there is a disproportionately high and adverse effect to these populations. Agencies may use demographic data available from the Bureau of the Census to identify the composition of the potentially affected population.

Environmental Justice Overview in the Study Area

The study area for the Environmental Justice analysis includes census block groups traversed by the Proposed Project corridor. Census block groups are statistical divisions of census tracts, and are generally defined to contain between 600 and 3,000 people. On average, the population density within the study area is low. Therefore, the census block groups included in the analysis tend to cover larger areas in comparison to surrounding higher population density areas.

Minority Populations

For the purposes of this analysis, 2007-2012 American Community Survey (U.S. Census Bureau) minority population data is presented by census block groups to characterize the ethnic makeup of the study area. The U.S. Census Bureau defines minorities as individuals who are members of the following population groups: American Indian or Alaskan Native, Asian or Pacific Islander, Black not of Hispanic origin, or Hispanic. Table 3.6-1 provides population percentages for the minority populations within the census block groups presented in Figure 3.6-1.

Table 3.6-1. Study Area Minority Population Profile by Census Block Group

Figure 3.6-1 Identifier #	Census Block Group	Total Population	Minority Population	Percent Minority
1	304002-1	1,241	177	14.3
2	451101-3	983	11	1.1
3	5206-3	10,542	6,316	59.9
4	5207-1	2,258	671	29.7
5	5502-1	886	355	40.1
6	3300-2	2,439	248	10.2
7	3400-1	1,162	472	40.6
8	2000-2	1,727	258	14.9
9	2100-3	999	182	18.2
10	2100-1	1,445	153	10.6
11	2100-2	1,105	169	15.3
Totals		24,787	9,012	36.4

Note: Population data is based on the number of census survey takers who provided their race. Therefore, the total population presented in this table does not equal the actual total population.

Source: U.S. Census Bureau, 2007-2012 American Community Survey

One census block group, located on the east side between the Tracy Substation and Patterson Pass Road, contains a minority population greater than 50 percent. Two census block groups fall between 40 and 50 percent minority population. Overall, the study area has a 36.4 percent minority population. On average, the study area tends to have a similar minority population distribution compared to the region as a whole.

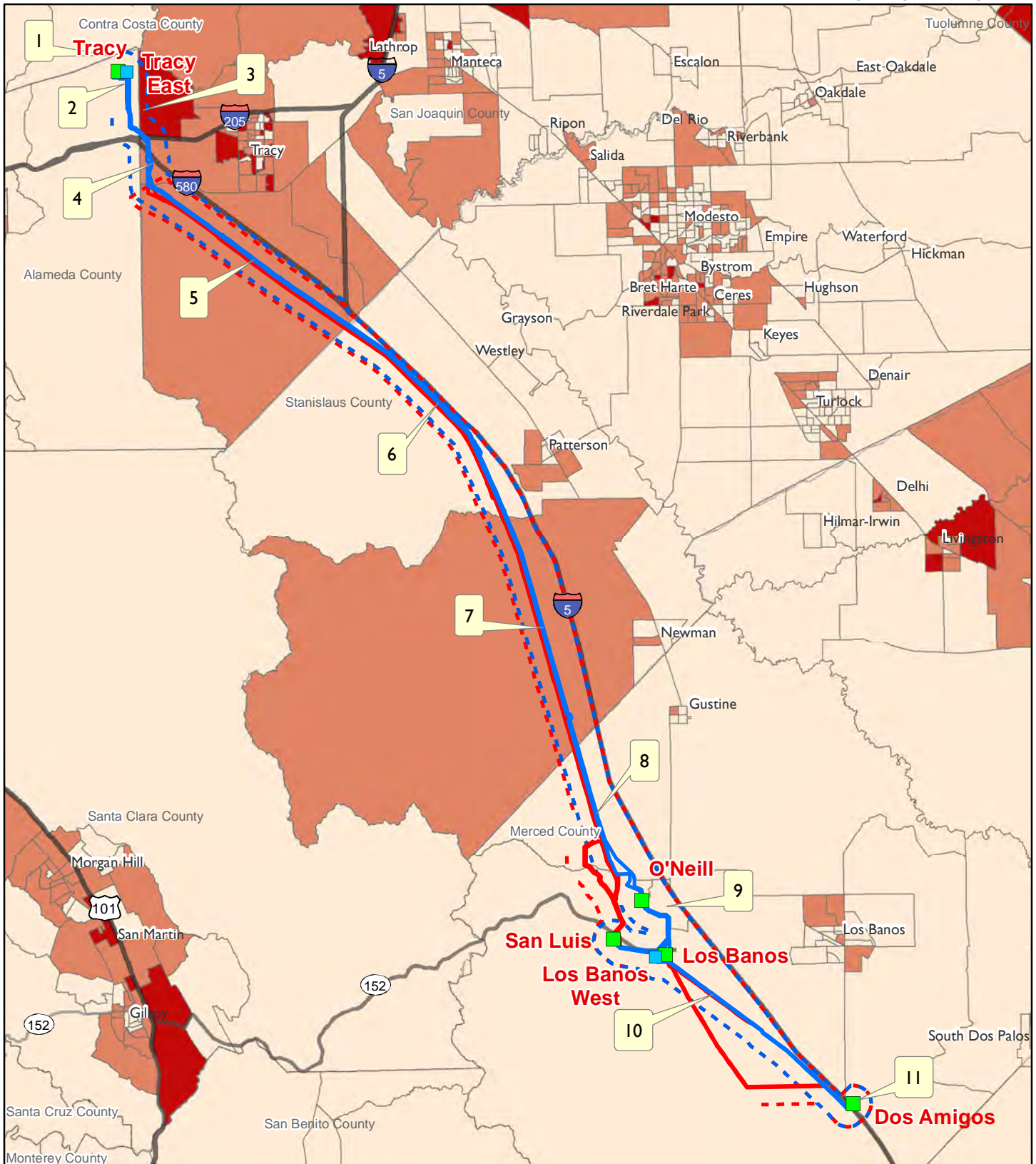
Low-Income Populations

The U.S. Census Bureau defines low-income populations by comparing the household income of a given area to that same area's weighted poverty thresholds established by the U.S. Department of Finance (U.S. Census, 2010). Table 3.6-2 presents the low-income population profile for the census block groups presented in Figure 3.6-2.

None of the study area census block groups contain a majority low-income population. One census block group contains a low-income population slightly greater than 35 percent; however, the remainder of the census block groups fall below 25 percent. In total, the study area has a 9.2 percent low-income population. On average, the study area tends to have a lower percent of low income population in comparison to the region as a whole.

3.6.1.2 Regulations, Plans, and Standards

The introduction to Section 3.6.1.1 above describes the regulations, plans, and standards applicable to environmental justice.



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Source: WAPA SNR, Aspen EG, California Department of Conservation

- Substation
- Proposed New Substations
- ▬ Proposed Project Corridor
- ▬ Corridor Alternatives
- ▬ Proposed Project Study Area
- ▬ Alternatives Study Area

Percent of Minority Population

- Less than 25%
- 25 - 50%
- Greater than 50%

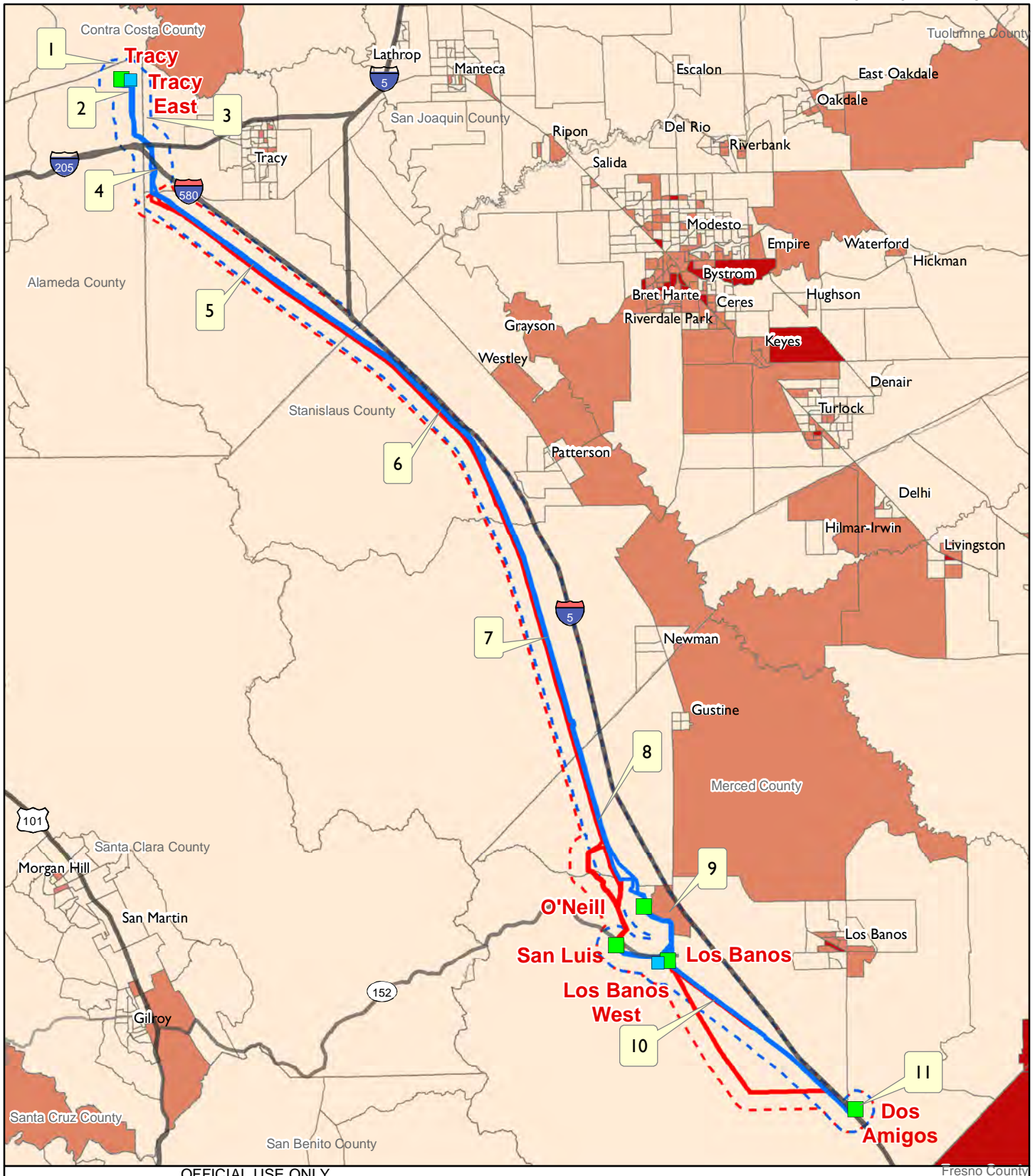
Census Block Group Identifier

Figure 3.6-1

Minority Population
Distribution

0 5.5 11 Miles





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- Substation
- Proposed New Substations
- Proposed Project Corridor
- Corridor Alternatives
- Proposed Project Study Area
- Alternatives Study Area

Percent of Population Below Poverty Level

- Less than - 25%
- 25% - 50%
- Greater than 50%

Census Block Group Identifier

Figure 3.6-2

Low-Income Population Distribution



Table 3.6-2. Study Area Low-Income Population Profile by Census Block

Figure 3.6-2 Identifier #	Census Block Group	Total Population	Low-Income Population	Percent Low-Income
1	304002-1	1,142	138	12.1
2	451101-3	981	11	1.1
3	5206-3	10,522	557	5.3
4	5207-1	2,258	166	7.4
5	5502-1	886	14	1.6
6	3300-2	2,351	454	19.4
7	3400-1	1,128	227	20.1
8	2000-2	1,727	297	17.2
9	2100-3	999	352	35.2
10	2100-1	1,445	97	6.7
11	2100-2	1,105	164	14.8
Totals		24,544	2477	10.1

Note: Population data is based on the number of census survey takers who provided their income status. Therefore, the total population presented in this table does not equal the actual total population.

Source: U.S. Census Bureau, 2007-2012 American Community Survey

3.6.2 Corridor Alternatives

3.6.2.1 Patterson Pass Road Alternative

The study area for this alternative overlaps the Proposed Project study area between Patterson Pass Road and Butts Road. The alternative study area does not cross additional census block groups. Similar to the Proposed Project in this segment, this alternative does not contain any census block groups with a minority or low-income population greater than 50 percent.

3.6.2.2 Butts Road Alternative

The study area for this alternative is west of the Proposed Project between Butts Road and the San Luis Substation. The alternative study area does not cross additional census block groups and does not contain any census block groups with a minority or low-income population greater than 50 percent.

3.6.2.3 West of Cemetery Alternative

The study area for this alternative is west of the Proposed Project between Butts Road and the San Luis Substation. The alternative study area does not traverse any additional census block groups and does not contain census block groups with a minority or low-income population greater than 50 percent.

3.6.2.4 West of O'Neill Forebay 70-kV Alternative

Much of the alternative study area overlaps the Proposed Project with the exception of a portion on the west side of the O'Neill Forebay, which follows the Butts Road and West of Cemetery Alternatives. The alternative study area does not cross additional census block groups. Similar to the Proposed Project in this segment, the alternative study area does not contain census block groups with a minority or low-income population greater than 50 percent.

3.6.2.5 San Luis to Dos Amigos Alternative

The study area for this alternative overlaps the Proposed Project study area between the San Luis Substation and the Dos Amigos Substation. The alternative study area does not cross additional census block groups and does not contain census block group with a minority or low-income population greater than 50 percent.

3.6.2.6 Billy Wright Road Alternative

Much of the study area for this alternative lies west of the Proposed Project between the San Luis Substation and the Dos Amigos Substation. The alternative study area does not cross additional census block groups and does not contain census block groups with a minority or low-income population greater than 50 percent.

3.7 Geology, Soils and Mineral Resources

This section describes the geology, soils and mineral resources in the study area, which is defined in Section 3.1.

3.7.1 Proposed Project

3.7.1.1 Affected Environment

Geology

Most of the study area is situated in an alluvial valley underlain by Quaternary Deposits. In the southern portion of the study area, along the foothills of the Diablo Range, the underlying geology includes Mesozoic Sedimentary and Metasedimentary Rocks, and Tertiary Sedimentary Rocks (USGS, 2005). Figures 3.7-1a through 3.7-1d depict the underlying geology within the study area.

Six geologic units underlie the Proposed Project study area:

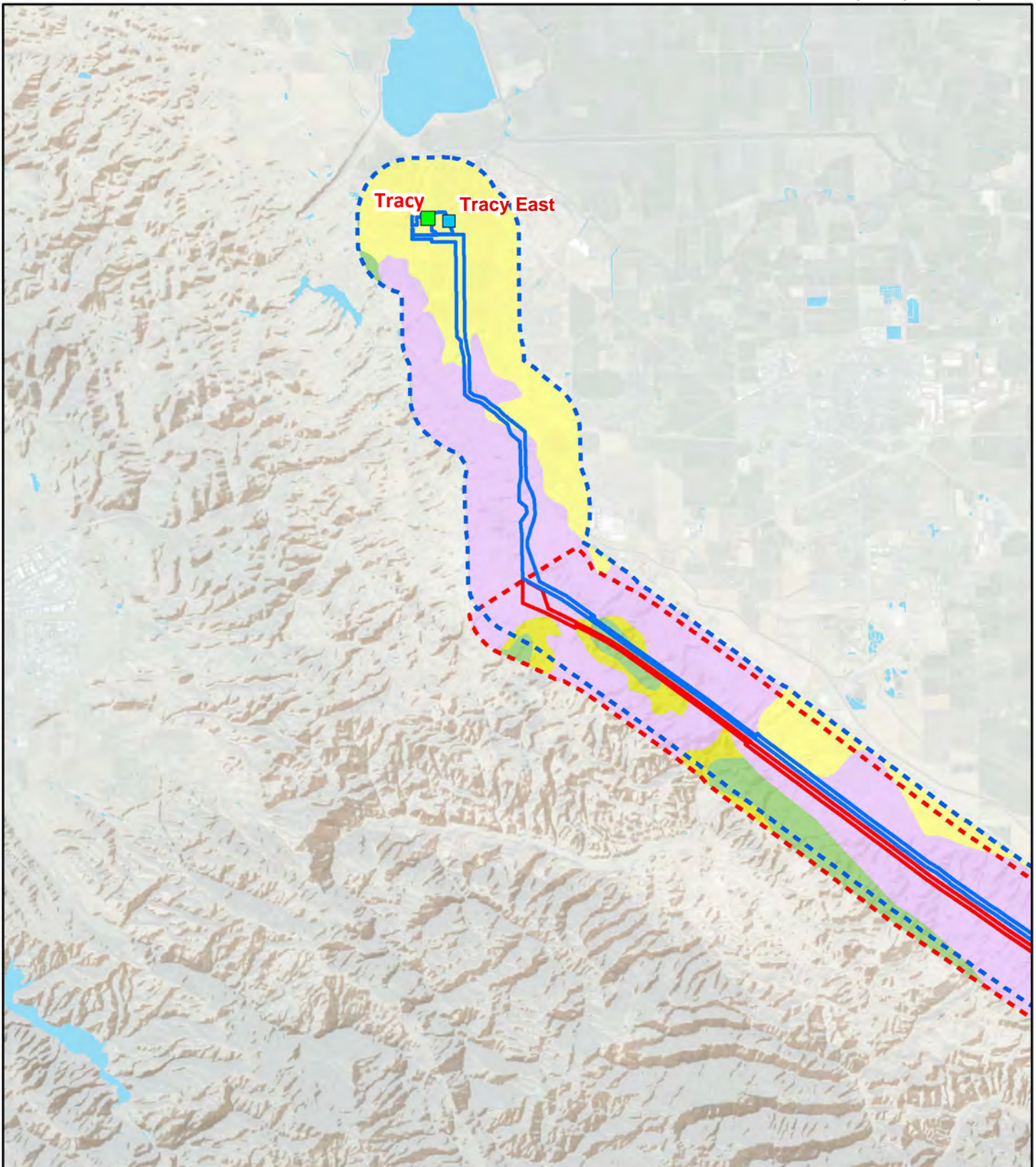
- **Q**, Alluvium (mostly Holocene) found near the Tracy Substation; Quaternary nonmarine and marine. This unit underlies most of the area around the Tracy Substation, I-5, and portions of the Proposed Project as it travels close to the Interstate.
- **QPc**, Plio-Pleistocene nonmarine; Pliocene nonmarine; Pliocene and/or Pleistocene sandstone, shale, and gravel deposits; in part Miocene.
- **Ku**, Upper Cretaceous marine, which are thick, extensive sequences of shale, siltstone, sandstone, and conglomerate primarily of deep-marine (turbidite) facies.
- **E**, Eocene marine, consisting of shale, sandstone, conglomerate, and minor limestone; in part Oligocene and Paleocene.
- **Ep**, Paleocene marine, consisting of sandstone, shale, and conglomerate; mostly well consolidated.
- **M**, – Moderately to well-consolidated Miocene marine sedimentary rocks, including sandstone, shale, siltstone, conglomerate, and breccia.

Seismicity

The study area crosses numerous Quaternary and Late Quaternary faults. None of these fault zones are considered to be active. Several active earthquake fault zones parallel the study area to the west, along the foothills of the Diablo Range, but the Project would not cross these active earthquake fault zones. In addition, there are no mapped landslide or liquefaction zones within the study area (CGS, 2014).

Soils

The southern portion of the study area is dominated by alfisols, entisols, and mollisols soil types. Inceptisols are dominant on the western side of the San Luis Reservoir. The northern portion of the study area contains mainly inceptisols and vertisols on the valley floor, with entisols and mollisols along the foothills of the Diablo Range (NRCS, 2014). Figures 3.7-2a through 3.7-2d depict the soil resources within the Proposed Project study area.



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- Substation
- Proposed New Substations
- ▬ Proposed Project Corridor
- ▬ Corridor Alternatives
- ▬ Proposed Project Study Area
- ▬ Alternatives Study Area
- Waterbody

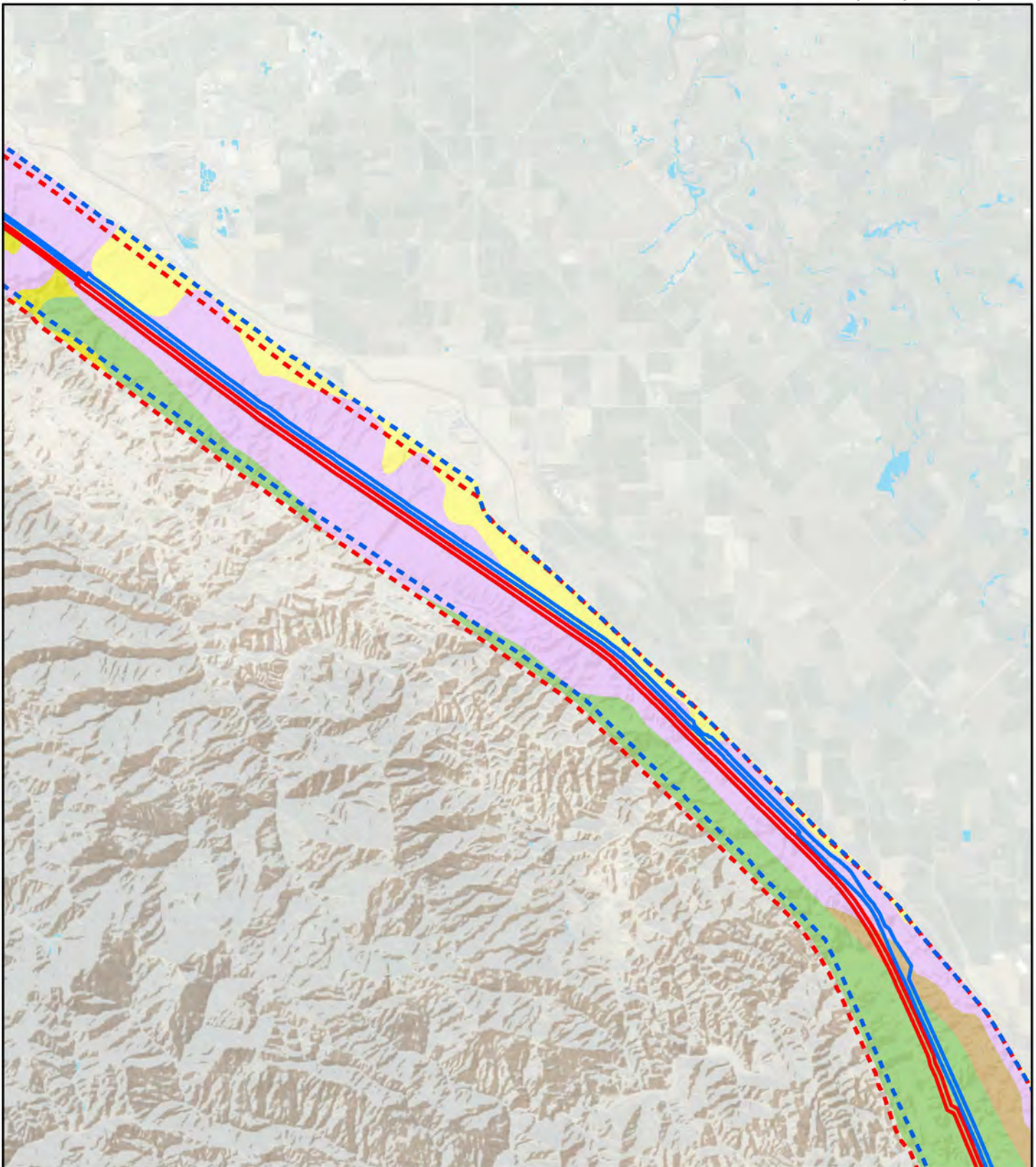
- Geologic Formation
- E
- Ep
- Ku
- M
- Q
- QPc
- Water

Figure 3.7-1a

Geologic Formations

0 1.5 3 Miles





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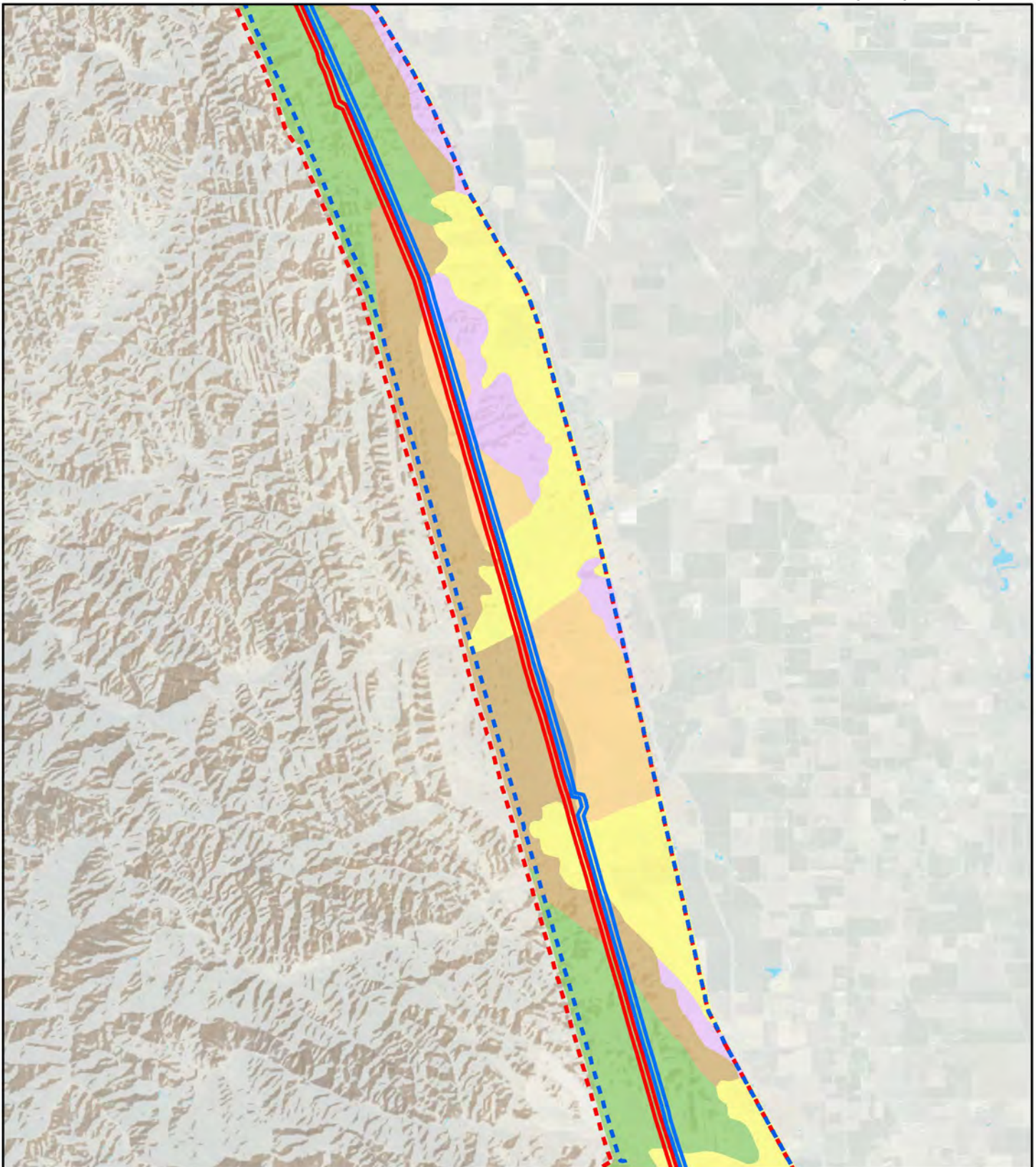
- Substation
- ▬ Proposed Project Corridor
- ▬ Corridor Alternatives
- ▬ Proposed Project Study Area
- ▬ Alternatives Study Area
- Waterbody

- | | |
|---|--|
| Geologic Formation | ■ QPc |
| ■ E | ■ Water |
| ■ Ep | |
| ■ Ku | |
| ■ M | |
| ■ Q | |

Figure 3.7-1b

Geologic Formations





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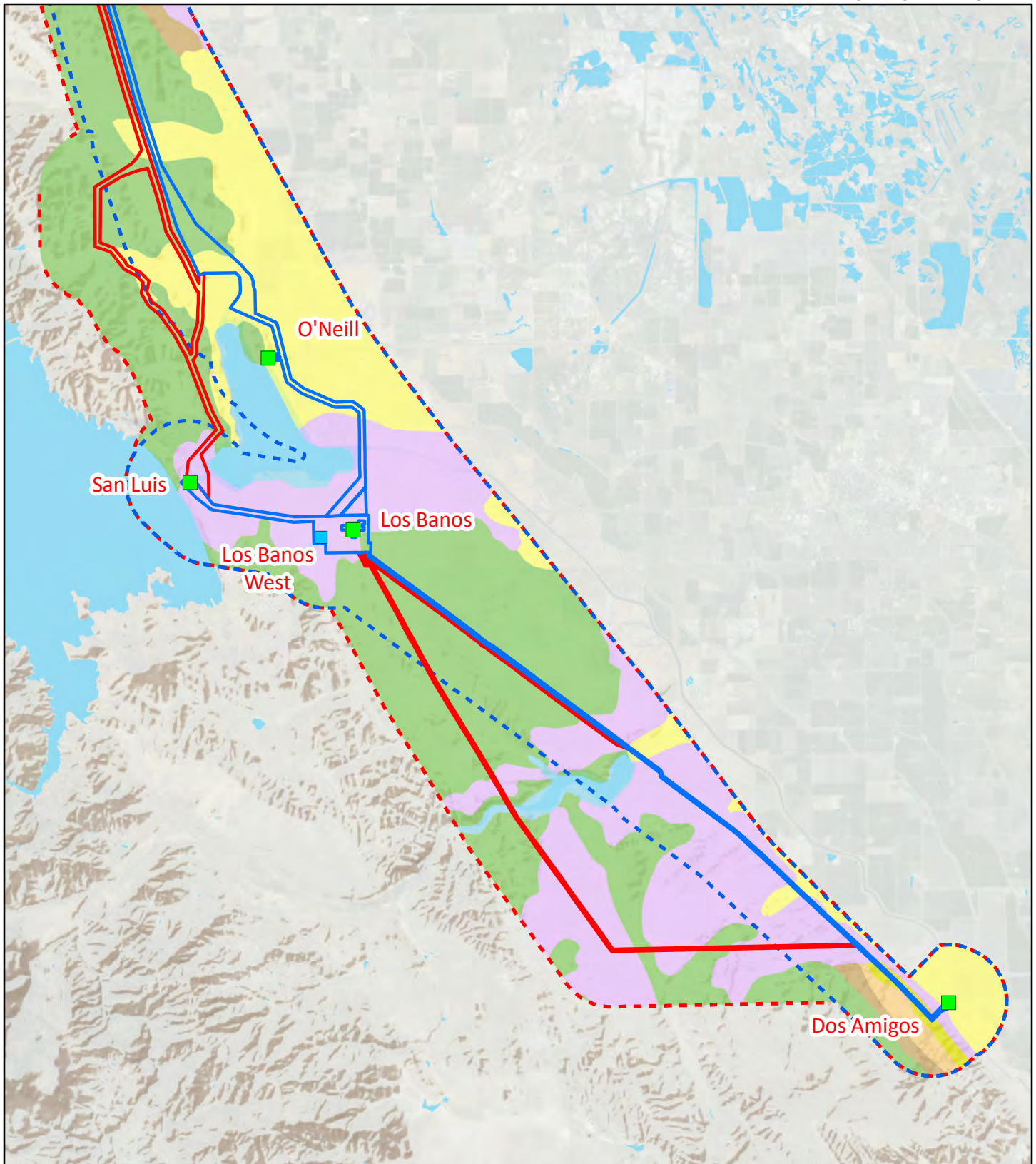
- Substation
- ▬ Proposed Project Corridor
- ▬ Corridor Alternatives
- ▬ Proposed Project Study Area
- ▬ Alternatives Study Area
- Waterbody

- | | |
|---|--|
| Geologic Formation | ■ Qp |
| ■ E | ■ Water |
| ■ Ep | |
| ■ Ku | |
| ■ M | |
| ■ Q | |

Figure 3.7-1c

Geologic Formations





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- Substation
- Proposed New Substations
- Proposed Project Corridor
- Corridor Alternatives
- - - Proposed Project Study Area
- - - Alternatives Study Area
- Waterbody

Geologic Formation — Water

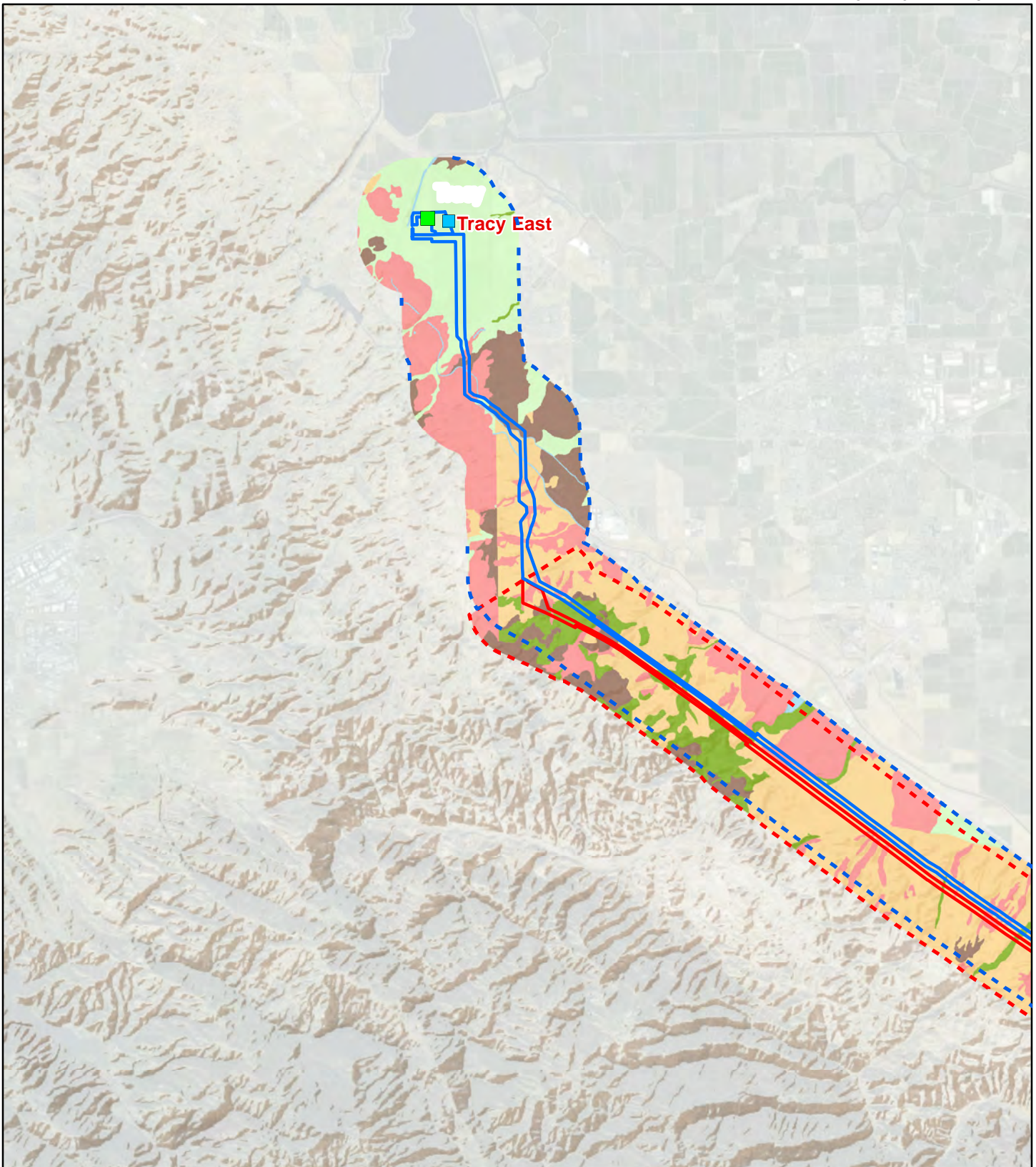
- E
- Ep
- Ku
- M
- Q
- QPc

Figure 3.7-1d

Geologic Formations

0 1.5 3 Miles





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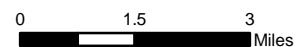
Source: WAPA SNR, Aspen EG, US Geological Survey

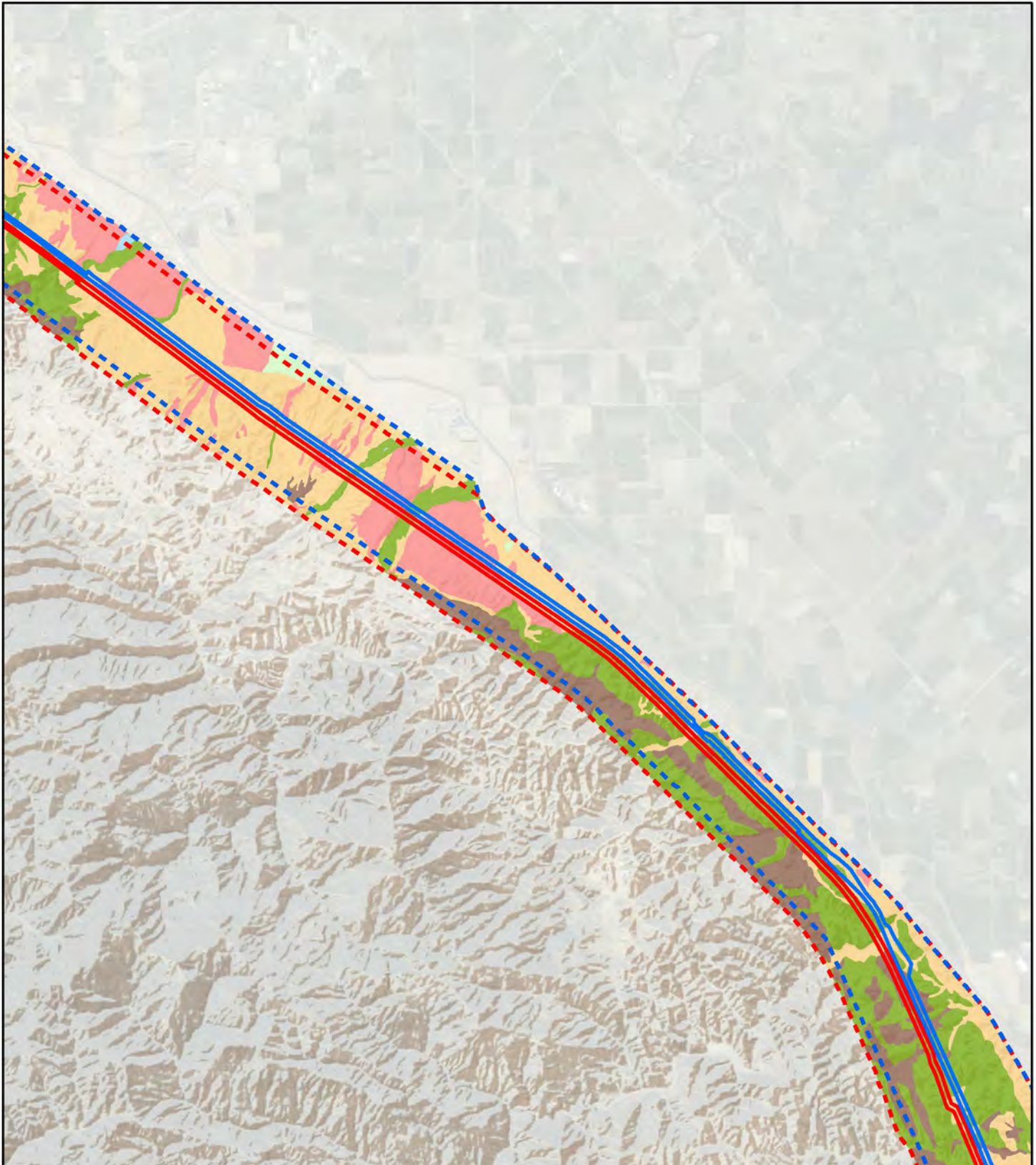
- Substation
- Proposed New Substations
- Proposed Project Corridor
- Corridor Alternatives
- - Proposed Project Study Area
- - Alternatives Study Area

- Soil Order
- Water
 - Alfisols
 - Entisols
 - Inceptisols
 - Mollisols
 - Vertisols

Figure 3.7-2a

Soil Orders





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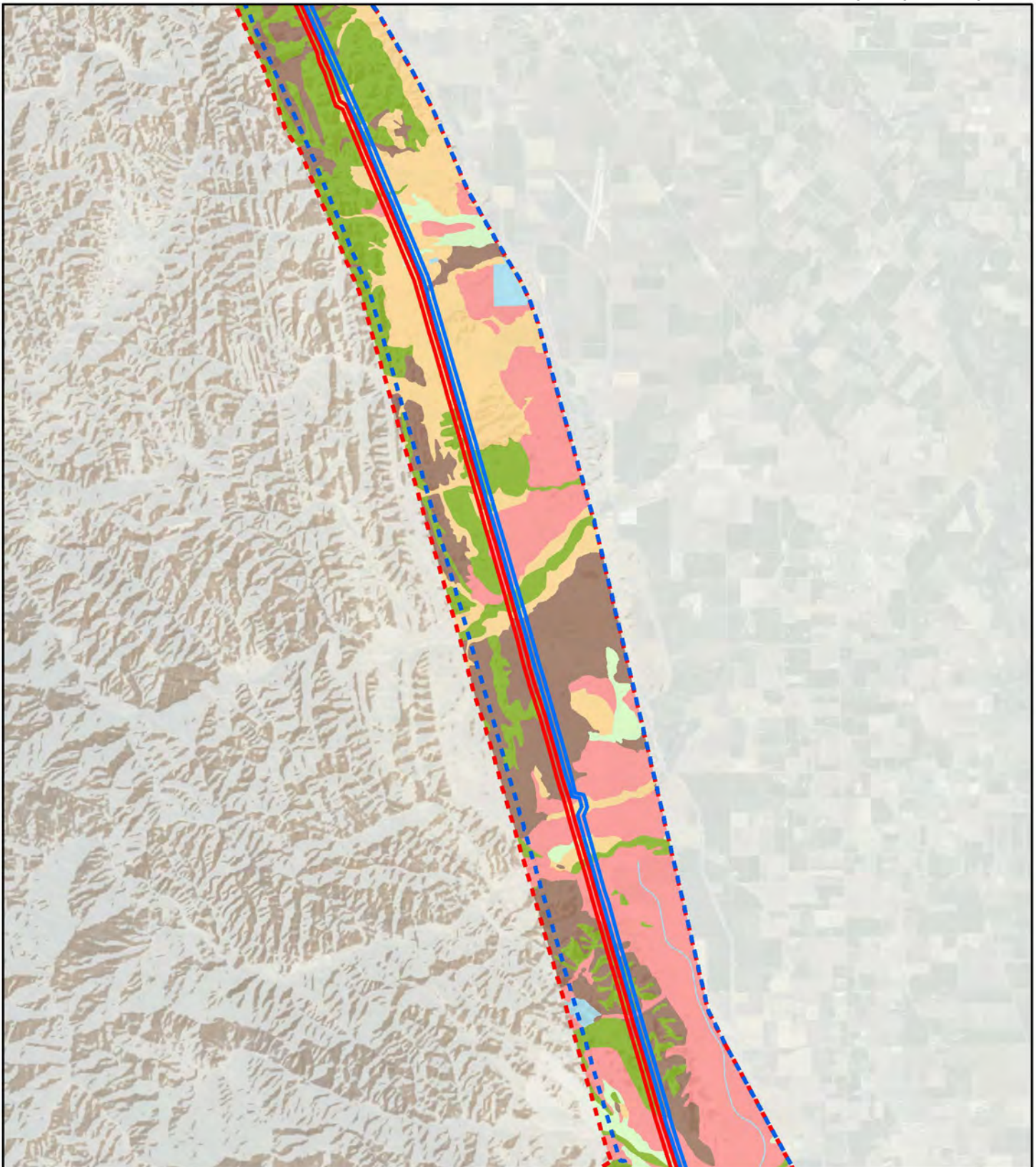
- | | | |
|-----------------------------|-------------|-----------|
| Substation | Soil Order | Mollisols |
| Proposed Project Corridor | Water | Vertisols |
| Corridor Alternatives | Alfisols | |
| Proposed Project Study Area | Entisols | |
| Alternatives Study Area | Inceptisols | |

Figure 3.7-2b

Soil Orders

0 1.5 3 Miles





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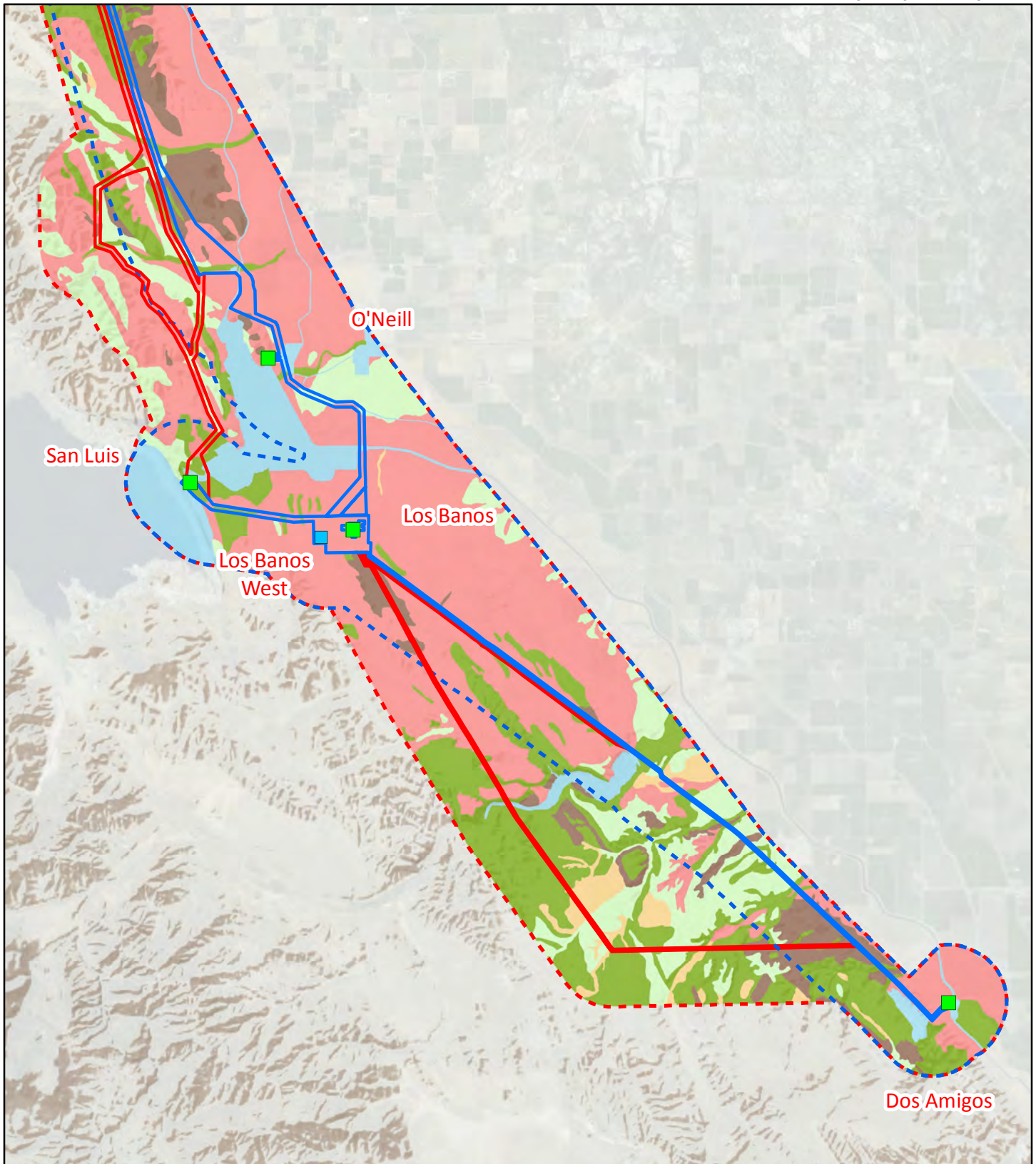
- | | | |
|-----------------------------|-------------------|-----------|
| Substation | Soil Order | Mollisols |
| Proposed Project Corridor | Water | Vertisols |
| Corridor Alternatives | Alfisols | |
| Proposed Project Study Area | Entisols | |
| Alternatives Study Area | Inceptisols | |

Figure 3.7-2c

Soil Orders

0 1.5 3 Miles





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- Substation
- Proposed New Substations
- Proposed Project Corridor
- Corridor Alternatives
- - Proposed Project Study Area
- - Alternatives Study Area

Soil Order

- Water
- Alfisols
- Entisols
- Inceptisols
- Mollisols
- Vertisols

Figure 3.7-2d

Soil Orders

0 1.5 3 Miles



Mineral Resources

Most of the study area contains sand and gravel that can be used by the construction industry. Additionally, salt and gypsum are mined in Alameda County. There are several small deposits of minerals of regional significance (classified by CGS as MRZ-2) within the study area. All of these regionally significant mineral deposits contain concrete aggregate that is important to the construction industry. Two areas are found in the Central Segment, one near the intersection of I-5 and I-580 (south of the City of Tracy), and the second in the southwestern part of Stanislaus County, west of the City of Newman. Another area of concrete aggregate deposits is found in the South Segment, along Los Banos Creek and its alluvial fan. (CGS, 1993, 1999, 2012; USGS, 2009)

3.7.1.2 Regulations, Plans, and Standards

- The Institute of Electrical and Electronics Engineers (IEEE) 693-2005: “Recommended Practices for Seismic Design of Substations.” IEEE Std 693 is designed as an integrated set of requirements for the seismic qualification of electrical power equipment.
- Alquist–Priolo Earthquake Fault Zoning Act of 1972 and the Seismic Hazards Mapping Act of 1990. The Alquist-Priolo Earthquake Fault Zoning Act of 1972 was developed to minimize the likelihood that structures used for human occupancy would be built over active faults by requiring a geological investigation for new development within designated active earthquake fault zones.
- The California Building Code (CBC, 2001) is based on the 1997 Uniform Building Code, with the addition of more extensive structural seismic provisions. The purpose of the California Building Code is to establish minimum requirements to protect life or limb, health, and property by regulating and controlling the design, construction, and quality of materials for all structural components of the built environment.
- The California Surface Mining and Reclamation Act of 1975 (SMARA). SMARA encourages the production, conservation, and protection of the state’s mineral resources.

3.7.2 Corridor Alternatives

3.7.2.1 Patterson Pass Road Alternative

The alternative study area largely overlaps the Proposed Project and traverses the exact same soil orders and geologic formations. Therefore, the existing conditions in this segment will be nearly identical to those described above for the Proposed Project.

3.7.2.2 Butts Road Alternative

The alternative study area lies farther to the west in comparison to the Proposed Project between Butts Road and the San Luis Substation. The affected environment for this alternative is very similar to the Proposed Project. The alternative study area traverses mainly alfisols and mollisols, as well as small areas of entisols and vertisols. The underlying geology for this alternative is composed of Upper Cretaceous marine sequences of shale, siltstone, sandstone, and conglomerate as well as Holocene alluvium and a small area of Pliocene and/or Pleistocene sandstone, shale, and gravel. In comparison to the Proposed Project, there are no new geologic hazards or changes to the mineral resources along this alternative.

3.7.2.3 West of Cemetery Alternative

The alternative study area overlaps with that of the Proposed Project between Butts Road and the San Luis Substation. However, much of the alternative study area lies farther west of the Proposed Project

and traverses more varying terrain. This alternative traverses primarily alfisols and mollisols, along with a small area of entisols. The underlying geology is composed almost entirely of Upper Cretaceous marine sequences of shale, siltstone, sandstone, and conglomerate, as well as small areas of Holocene alluvium and Pliocene and/or Pleistocene sandstone, shale, and gravel. In comparison to the Proposed Project, there are no new geologic hazards or changes to the mineral resources along this alternative.

3.7.2.4 West of O'Neill Forebay 70-kV Alternative

The alternative study area runs from San Luis Substation to O'Neill Substation along the west and north sides of the O'Neill Forebay, and traverses primarily mollisols, along with small areas of alfisols and entisols. The underlying geology is composed almost entirely of Upper Cretaceous marine sequences of shale, siltstone, sandstone, and conglomerate and Holocene alluvium, as well as a very small area of Pliocene and/or Pleistocene sandstone, shale, and gravel. In comparison to the Proposed Project, there are no new geologic hazards or changes to the mineral resources along this alternative.

3.7.2.5 San Luis to Dos Amigos Alternative

The alternative study area largely overlaps with that of the Proposed Project between the San Luis Substation and the Dos Amigos Substation and traverses the exact same soil orders and geologic formations. Therefore, the existing conditions in this segment will be nearly identical to those described for the Proposed Project. In comparison to the Proposed Project, there are no new geologic hazards or changes to the mineral resources along this alternative.

3.7.2.6 Billy Wright Road Alternative

In the vicinity of the San Luis and Los Banos Substation, the alternative study area largely overlaps with that of the Proposed Project. Therefore, the existing geology will be similar to that described for the Proposed Project. South of the Los Banos Substation, the alternative study area lies farther west of the Proposed Project and traverses more rugged terrain. This alternative traverses primarily entisols and mollisols, as well as small areas of alfisols, inceptisols, and vertisols. The underlying geology is composed entirely of Upper Cretaceous marine sequences of shale, siltstone, sandstone, and conglomerate and Pliocene and/or Pleistocene sandstone, shale, and gravel. In comparison to the Proposed Project, there are no new geologic hazards or changes to the mineral resources along this alternative.

3.8 Land Use

This section describes the land uses in the study area, which is defined in Section 3.1.

3.8.1 Proposed Project

3.8.1.1 Affected Environment

Western's Tracy Substation is located immediately to the east of the C.W. "Bill" Jones Pumping Plant. Western also owns a triangular shaped lot approximately 180 acres in size immediately to the north of the substation. The substation area is otherwise surrounded by agricultural fields. From the substation, the Proposed Project corridor heads south through open agricultural fields, paralleling an existing transmission corridor. It passes within 0.4 miles of the Mountain House Elementary School District, which is a single-site school district serving kindergarten through 8th grade, with an average annual enrollment of approximately 50 students (mtnhouse.k12.ca.us, 2014). The corridor crosses the Delta Mendota Canal near one of many wind farms located to the west, then turns southeast and crosses the canal again; a cluster of residences are located approximately 0.5 miles to the northeast here, and the San Joaquin Delta College South Campus at Mountain House is located approximately 0.25 miles to the east-northeast. As it crosses into San Joaquin County, the Proposed Project corridor turns south again, crossing I-205 near the west edge of the City of Tracy, where it crosses the Delta-Mendota Canal, the California Aqueduct and I-580. The corridor here crosses a large parking lot at the west end of a large industrial park that is covered by the City of Tracy's Cordes Ranch Specific Plan, and then a narrow strip of agricultural land, between the Aqueduct and I-580. A small portion of the project corridor is within the City Limits of the City of Tracy, to the south and east of where I-205 crosses over the Delta-Mendota Canal. The corridor is within the City's Sphere of Influence between the Delta-Mendota Canal and I-580.

From I-580, the landscape becomes rural, consisting of rolling hills used primarily for grazing, though several existing transmission lines and a Shell Oil pipeline station are nearby. Zoning for this area is AG-160, extending to the Stanislaus County border. There are several conservation easements managed by the San Joaquin Council of Governments within the study area just west of I-580. As the Proposed Project corridor turns southeast, it passes within 0.2 mile of the northeast corner of Lawrence Livermore National Laboratory's 7,000-acre Site 300 testing center. From this point all the way to the O'Neill Forebay, the corridor passes through the rolling hills of the Diablo Range. Livestock grazing is the dominant land use throughout this segment, although the corridor also traverses active agricultural fields at Oak Flat Road and near Davis Road in Stanislaus County, and near Sullivan Road at the Stanislaus/Merced County border.

Two large ranches near the study area at the Stanislaus/Merced County border are under conservation easement: the Simon Newman Ranch and the Romero Ranch. The Simon Newman Ranch is administered by the Nature Conservancy. It would be crossed by the Proposed Project and the Patterson Pass Road Alternative. The Romero Ranch is under easement to a private conservation organization. The Romero Ranch would be crossed by the Proposed Project and all alternative routes in the San Luis Segment. The Simon Newman Ranch easement restricts many types of development, with the objective to protect the rare sycamore alluvial woodland, oak woodlands and grasslands on the ranch, which are important foraging and nesting area for many species of birds. Transmission line development is not listed as a prohibited land use on the ranch. The Romero Ranch is under a similar easement with similar restrictions. The ranches were placed in conservancy in part with funding by Reclamation as part of an effort to protect habitat values to mitigate impacts related to the delivery of CVP water. (BOR, 2010b).

From the Butts Road crossing in western Merced County, the Proposed Project corridor is located on the east side of O'Neill Forebay before interconnecting at Los Banos Substation and then to San Luis Substation. The Project would travel adjacent to the approved but not yet constructed Quinto Solar Project near McCabe Road, and then cross land on the eastern side of O'Neill Forebay that is under conservation easement administered by the California Department of Fish & Wildlife. Between San Luis and Dos Amigos Substations, the Proposed Project corridor crosses private ranchlands up to the crossing of I-5 where it would interconnect into the Dos Amigos Substation. It would also cross through the proposed but not yet approved Wright Solar Park just north of the Los Banos Reservoir. Short segments within lands administered by the California Department of Parks and Recreation on either end of Los Banos Creek Reservoir, and an area to the north of the reservoir administered by DWR, are also crossed. Another area administered by DWR is just to the east of the Dos Amigos Substation.

3.8.1.2 Regulations, Plans, and Standards

Alameda County

The portions of the Proposed Project in Alameda County are covered by the East County Specific Plan (ECSP), which states that the county shall preserve the applicable area for intensive agricultural use. The plan also includes guidelines that incorporate the setbacks recommended by the California Department of Education for the siting of new schools near high-voltage electrical transmission lines for all sensitive land uses.

San Joaquin County

The Proposed Project and Patterson Pass Road Alternative routes travel through the same zoning areas in San Joaquin County. Near the border with Alameda County, the Project area is zoned AG-40 (Agricultural, with a minimum parcel size of 40 acres). The Proposed Project Route crosses a parcel zoned as I-L (Limited Industrial) and a small strip of AG-40 land in a large parcel south of I-205 between the Delta-Mendota Canal and the California Aqueduct. From I-580 all the way to the Stanislaus County border, the land is zoned as AG-160 (Agricultural, with a minimum parcel size of 160 acres). San Joaquin County's General Plan contains several objectives and policies addressing development of energy-related infrastructure, including to "protect the scenic values of the County landscape from inappropriately located overhead utility lines (SJC, 1992). It calls for siting new transmission lines adjacent to existing lines, except in the case of 500-kV transmission lines, which "for safety reasons shall be separate from existing corridors by at least 500 yards." It also calls for developing the joint use of utility corridors for recreation and trail uses, and to coordinate development of transmission lines so they do not interfere with agricultural operations.

Stanislaus County

The entire Proposed Project corridor in Stanislaus County runs through just two agricultural zones: A-2-160 and A-2-40. The latter numbers (160 and 40) refer to the minimum size for a subdivided parcel; otherwise, the two zones are identical in land use and requirements. The first approximately 3.5 miles of the study area starting from the San Joaquin County border is A-2-160, with the remainder A-2-40. Public utility facilities are allowed in these zones with a conditional use permit. The General Plan Policy Two states that lands designated as Agriculture "shall be restricted to uses that are compatible with agricultural practices, including natural resources management, open space, outdoor recreation and enjoyment of scenic beauty."

Merced County

In Merced County the Proposed Project would pass through several general zones. In the rural areas, all lands are either Agricultural (A), or Foothill Pasture (FP) zones. The FP designation provides for non-cultivated agricultural practices that typically require larger areas of land due to poor soil quality, limited water availability and steeper slopes. It is typically applied to areas in the Diablo Range on the west side of the County. The A designation provides for cultivated agricultural practices that rely on good soil quality, adequate water availability, and minimal slopes. This is the largest County land use designation by area in the County and is typically applied to areas on the valley floor. Both these zones allow for energy production and transmission facilities in rural parts of the County.

The County has prepared a Community Plan for the Villages of Laguna San Luis near the intersection of SR 33 and SR 152. The Proposed Project would cross through two designated areas within the community planning area. The Open Space (OS) area, which includes the Los Banos Substation, applies to lands that contain opportunities for biological conservation, reflect an agricultural heritage, provide recreational opportunities, promote general public education, have an important scenic or utility value, or provide critical open space linkages within the community. Starting approximately 1 mile south of SR 152, the Project would enter an Urban Reserve (UR) area, which are lands "considered appropriate for intensive urban land use activities at some future date." This UR area is considered to be a logical location for in-fill development as it is surrounded on three sides by urban designated uses. Specific uses may be proposed and approved within the UR area concurrent with an amendment to the Villages Community Plan, which typically requires an assessment of existing community vacant land availability. All areas within the community plan area that would be affected by the Proposed Project are currently zoned as A-2, for large agricultural operations, and the plan notes that, "The Villages CP does not propose any changes to the Agricultural Zoning designations."

Merced County's General Plan includes several policies addressing transmission projects:

- LU-1.11, Infrastructure Equity: Ensure that new development does not erode current levels of County service and that demands on public facilities and services from new development do not result in an unreasonable and inequitable burden on existing residents and property owners.
- LU-1.12, Hillside Development Standards: Prepare and adopt hillside development standards and illustrated design guidelines addressing viewshed protection for all hillside development.
- CIR-4.6, Multi-Use Trails: Encourage the development of multi-use corridors (such as hiking, equestrian, and mountain biking) in open space areas, along power line transmission corridors, utility easements, rivers, creeks, abandoned railways, and irrigation canals.
- CIR-6.8, Transmission Tower and Lines: Review all proposed radio, television, power, or related transmission towers and lines for appropriate location and possible air travel conflicts during the discretionary application process.
- PFS-5.3, New Transmission and Distribution Lines: Encourage new transmission and distribution lines to be sited within existing utility easements and rights-of-way or utilize joint-use of easements among different utilities to avoid impacting existing communities.
- PFS-5.4, Electrical Interference: Require mitigation of electrical interference to adjacent land uses in the placement of electrical and other transmission facilities.
- PFS-5.6, Underground Power Transmission: Require power transmission and distribution facilities to be located underground within urban communities and residential centers.

- PFS-5.7, Utility System Expansion: Coordinate with local gas and electric utility companies in the design and location, and appropriate expansion of gas and electric systems, while minimizing impacts to agriculture and minimizing noise, electromagnetic, visual, and other impacts on residents.

San Luis Reservoir State Recreation Area Resource Management Plan and General Plan

The San Luis Reservoir State Recreation Area Resource Management Plan and General Plan (SLRSRA RMP/GP) provides goals and guidelines for management of the San Luis Reservoir State Recreation Area and adjacent lands. The Plan Area consists of two geographically separate areas totaling over 27,000 acres in the vicinity of Los Banos, California. The Plan Area includes the water surfaces of San Luis Reservoir, O'Neill Forebay, and Los Banos Creek Reservoir, as well as adjacent recreation lands. Refer to Section 3.12 (Recreation) for additional information on the SLRSRA.

3.8.2 Corridor Alternatives

3.8.2.1 Patterson Pass Alternative

This alternative route travels adjacent to the Proposed Project route in San Joaquin, Stanislaus, and Merced Counties. The land use designations and planning documents for this alternative are the same as those portions of the Proposed Project.

3.8.2.2 Butts Road Alternative

This alternative corridor would travel around O'Neill Forebay on the west, including through portions of the SLRSRA, though lands are zoned by the county as either Agricultural or Foothill Pasture. The Proposed Project corridor runs on the east side of the Forebay, also through Agricultural and Foothill Pasture lands, with small differences in the amounts of each. Therefore, the land use designations and planning documents for this alternative are the same as the Proposed Project, described above.

3.8.2.3 West of Cemetery Alternative

This alternative travels entirely through lands zoned as Foothill Pasture. This route travels near the San Joaquin Valley National Cemetery and the recreation areas along the western side of O'Neill Forebay. All of which are within the FP zone in Merced County.

3.8.2.4 West of O'Neill Forebay 70-kV Alternative

This alternative travels in the same corridor as the Butts Road Alternative corridor from the San Luis Substation to McCabe Road, and then travels in the Proposed Project corridor from McCabe Road to the O'Neill Substation. Zoning for the entire corridor is either Foothill Pasture or Agricultural, as described above. This route travels near the San Joaquin Valley National Cemetery and the recreation areas along the western side of O'Neill Forebay, and near the O'Neill Forebay Wildlife Area and Santa Nella Village in the eastern side of the Forebay. The entire route is within the FP or A zones, but it is adjacent to lands zoned for light density urban development near Santa Nella Village and the Villages at Laguna San Luis.

3.8.2.5 San Luis to Dos Amigos Alternative

This alternative route would be adjacent to the Proposed Project route between the Los Banos and Dos Amigos Substations in Merced County. The land use designations and planning documents for this alternative are the same as that segment of the Proposed Project.

3.8.2.6 Billy Wright Road Alternative

This alternative corridor would be west of the Proposed Project between the Los Banos and Dos Amigos Substations. It would travel through an A2 zone (Exclusive Agriculture) within the Villages at Laguna San Luis for about 1 mile near the Los Banos Substation; this area is currently designated as open space, but also as Urban Reserve, meaning that Merced County could expand residential or commercial uses into this area in the future by changing the zoning of the area, though no changes are currently proposed. It otherwise would travel through private lands zoned as Foothill Pasture, including over the western end of the Los Banos Creek Reservoir, which is within the SLRSRA.

3.9 Noise and Vibration

3.9.1 Proposed Project

3.9.1.1 Affected Environment

This section describes existing conditions as they relate to potential noise impacts of the Proposed Project corridor. Noise is generally described as unwanted sound that rises to the level of annoyance. Sound is mechanical radiant energy that is transmitted by longitudinal pressure waves in a material medium, such as air, to a receiver. Noise can interfere with hearing, and therefore communication. At high levels, it can damage hearing temporarily or permanently. Noise perception depends on the nature and intensity of the sound, relative location, meteorological conditions, terrain, and background noise levels. The sound of a waterfall, for instance, is generally considered more pleasant than that of a jackhammer at the same sound intensity. Sound can have physical effects, such as interfering with sleep or damaging the ear drum at high levels, and also psychological effects, which can be cumulative over time. A sound that is tolerable when in a relaxed state can become intolerable when the recipient is under pressure, such as when needing to perform a complex task in a given time frame.

Sound is measured in decibels (dB) based on the amplitude of the pressure wave as it strikes the detecting microphone. The human ear can hear sounds between 20 hertz (Hz) and 20,000 Hz, although the ability to hear very low and very high frequencies falls off with age and with hearing damage caused by exposure to high noise levels. Humans are more sensitive to certain frequencies than others, and therefore, a weighted level measurement (dBA) is used to characterize the effect of noise on humans. Table 3.9-1 provides definitions for the terms commonly used to describe and measure noise.

Table 3.9-1. Summary of Acoustical Terms

Term	Definition
Decibel (dB)	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micropascals (20 micronewtons per square meter).
A-Weighted Sound Level (dBA)	The sound level in decibels as measured on a sound level meter using the A weighted filter network. The A-weighted filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise. All sound levels in this report are A-weighted.
Ambient Noise Level	The composite noise from all sources resulting in the normal, existing level of environmental noise at a given location. The Leq, as defined below, typically defines the ambient level.
Community Noise Equivalent Level (CNEL)	A measurement used to characterize average noise levels over a 24-hour period, with weighting factors included for evening and nighttime noise levels. Leq values for the evening period (7 p.m.–10 p.m.) are increased by 5 dB, while Leq values for the nighttime period (10 p.m.–7 a.m.) are increased by 10 dB.
Equivalent Noise Level (Leq)	The average A-weighted dB level, on an equal energy basis, during the measurement period.
Maximum Noise Level (Lmax)	The maximum noise level during a sound measurement period.
Minimum Noise Level (Lmin)	The minimum noise level during a sound measurement period.
Peak Level	The peak is not the same as the Lmax. The peak level is the maximum value reached by the sound pressure. There is no time-constant applied.
Acoustical Use Factor	The percentage of time per hour that the equipment typically would be operated at maximum power.

Hazards of exposure to noise can include hearing loss, which can occur with exposure as low as 85 dBA for 8 hours per day (Berglund, 1995), and sleep disruption. These can cause depression, impaired speech discrimination, impaired school and job performance, limited job opportunities, and a sense of isolation (Suter, 1991). Figure 3.9-1 lists the sound level in dBA for common outdoor noise sources.

Ground-borne vibration generated by construction vehicles, equipment, and related activities may also affect people living or working near construction areas. Some construction activities such as blasting, pile-driving, and operating heavy earth-moving equipment can cause ground borne vibration that results in perceptible movement of building floors, rattling of windows, shaking of items on shelves or hanging on walls, and rumbling sounds. Typically, ground-borne vibration attenuates rapidly with distance from the source of vibration. Man-made vibration issues are therefore usually confined to short distances (i.e., 500 feet or less) from the source (FTA, 1995).

Noise Environment in the Project Area

Noise-sensitive land uses include residences, schools, hospitals and workplaces. The people within these places are often called “sensitive receptors.” The region surrounding the Proposed Project corridor is largely rural, with some isolated farmhouses, occasional groups of residences, and a few commercial businesses. Groups of residences and other noise sensitive areas located within 1 mile of the Proposed Project corridor are listed below with distance of receptor to the corridor edge in parentheses:

North Segment

- the community of Mountain House (0.5 mile)
- Mountain House Elementary School (0.5 mile)
- a group of residences near the intersection of W. Grantline Road and S. Central Parkway south of Mountain House (0.2 mile)
- the San Joaquin Delta College South Campus at Mountain House (0.2 mile)
- a group of residences near the intersection of W. Patterson Pass Road and Midway Road (0.25 mile)

Central Segment

- a group of residences off the southern end of S. Tracy Boulevard (0.2 mile)
- a group of residences off Vernalis Road near the San Francisco Public Utilities Commission’s Tesla Water Treatment Facility (0.3 mile)
- a single residence approximately 1 mile west of South Bird Road (0.2 mile)
- a single residence at the end of Gaffery Road (0.3 mile)
- a single residence on Khalsa Road (0.2 mile)
- two residences at the end of Ingram Creek Road (0.1 mile)
- a single residence adjacent to southbound I-5 near Sperry Avenue (0.9 mile)
- one to two residences on Oak Flat Road, one of which may have been converted to another use (0.7 to 1 mile)
- a single residence off the end of Fink Road (0.3 mile)
- two residences at Sullivan Road (0.1 mile)

San Luis Segment

- two residences at Butts Road (0.1 and 0.9 mile, respectively)
- a group of residences and the San Joaquin Valley National Cemetery at McCabe Road (0.1 mile)
- recreation areas located at San Luis Reservoir, O'Neill Forebay, and Los Banos Creek Reservoir, including campgrounds and picnic areas (0.2 mile to the San Luis Creek Campground)
- a group of residences and a commercial campground east of the Los Banos Substation (0.1 mile)

South Segment

- a group of residences near Billy Wright Road (0.07 mile)
- a single residence near Canyon Road (0.1 mile)
- a group of residences off Arburua Road (0.1 mile)

Existing Noise Sources

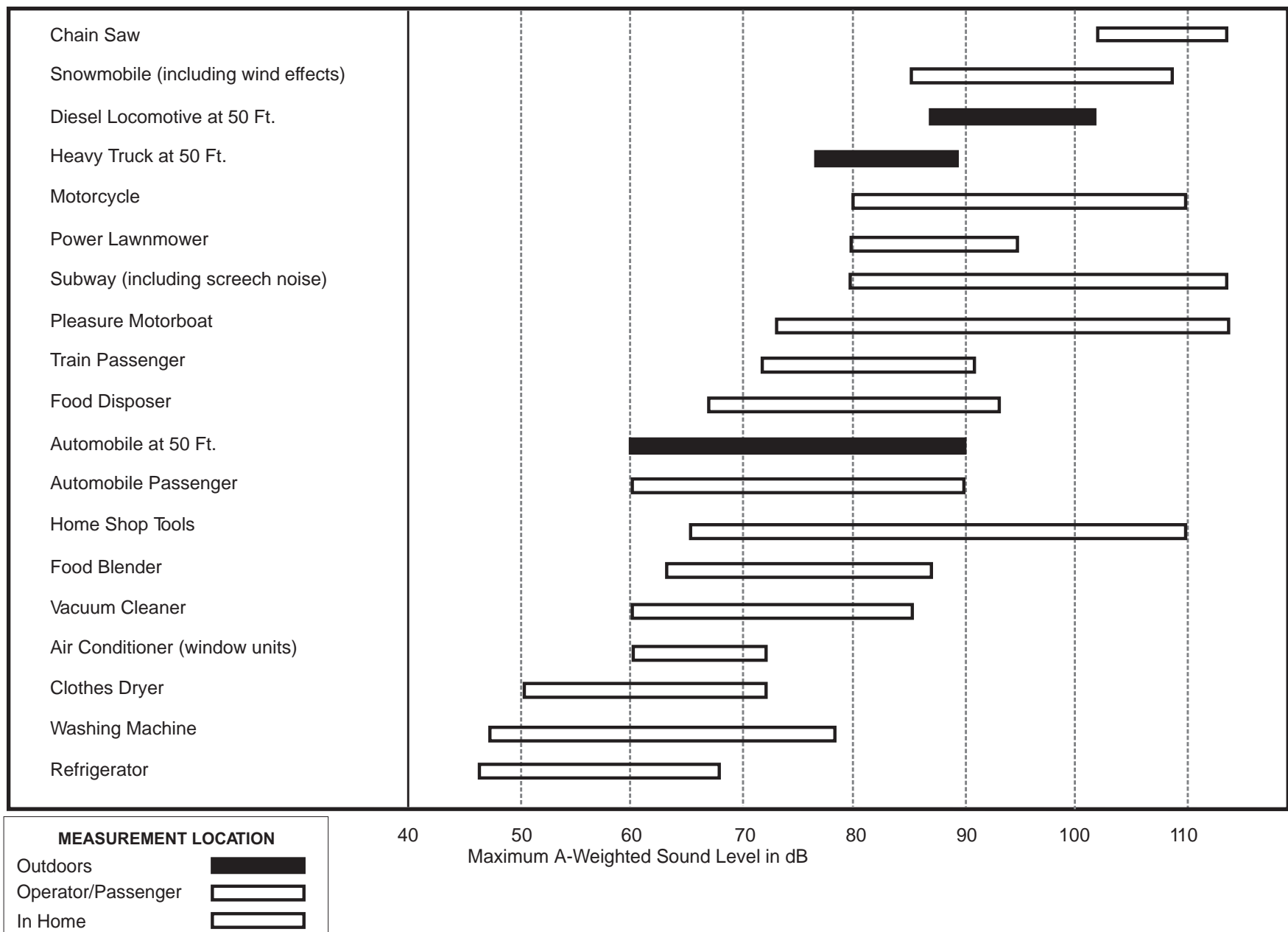
Existing sources of ambient noise in the study area include the following:

- traffic on I-5, I-580, I-205, SR 152, SR 33 and local roadways;
- machinery at industrial and commercial facilities along the route, including the pumping/generating facilities at the Tracy (C.W. "Bill" Jones), San Luis (William R. Gianelli), and O'Neill facilities;
- wind turbines of the wind farms along the Diablo Range; and
- occasional farm machinery.

3.9.1.2 Regulations, Plans, and Standards

Federal and State Standards

The Occupational Safety and Health Administration (OSHA) and the California Noise Control Act (California Health and Safety Code Sections 46000-46080) regulate the generation of and exposure to noise. County and local governments also set noise regulations to protect communities against nuisance noises. The EPA has published an outdoor noise level guideline of 55 dBA averaged over 24 hours. Table 3.9-2 shows California guidelines for evaluating the compatibility of various land uses as a function of noise exposure.



Source: USEPA, 1978.

Protective Noise Levels
Condensed Version of
EPA Levels Document

Figure 3.9-1
Typical Range of Common Sounds
Heard in the Environment

Table 3.9-2. Land Use Compatibility for Community Noise Environment										
LAND USE CATEGORY	COMMUNITY NOISE EXPOSURE – L _{dn} or CNEL (db)									
	50	55	60	65	70	75	80			
Residential – Low Density Single Family, Duplex, Mobile Home										
Residential – Multi-Family										
Transient Lodging – Motels, Hotels										
Schools, Libraries, Churches, Hospitals, Nursing Homes										
Auditorium, Concert Hall, Amphitheaters										
Sports Arena, Outdoor Spectator Sports										
Playgrounds, Neighborhood Parks										
Golf Courses, Riding Stables, Water Recreation, Cemeteries										
Office Buildings, Business Commercial and Professional										
Industrial, Manufacturing, Utilities, Agriculture										
	Normally Acceptable. Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.									
	Conditionally Acceptable. New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features are included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.									
	Normally Unacceptable. New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.									
	Clearly Unacceptable. New construction or development should generally not be undertaken.									

Source: OPR, 2003

Local Noise Ordinances and Policies

Each local government aims to protect its residents from intrusive noise. Most communities specifically restrict disturbing noises at night. Table 3.9-3 shows the noise standards that the counties in the Proposed Project area consider compatible with residential land uses.

Table 3.9-3. Residential Noise Limits by County

County	Day (7 am to 10 pm)	Night (10 pm to 7 am)	L _{max}
Alameda	50-70 dBA, depending on duration	45-65 dBA, depending on duration	NA
Merced	background plus 10 dBA, or 55 dBA L ₅₀	background plus 5 dBA, not to exceed 65 dBA L _{dn} or 50 dBA L ₅₀	75 dBA day 79 dBA night
San Joaquin	55 dBA Leq (at the property line of the receiving land use)	45 dBA Leq	70 dBA day 65 dBA night
Stanislaus	50 dBA L _{max}	45 dBA L _{max}	NA

Alameda County's East County Area Plan, has several policies addressing noise impacts, including Policy 289 which states that "The County shall limit or appropriately mitigate new noise-sensitive development in areas exposed to projected noise levels exceeding 60 dBA based on the California Office of Noise Control Land Use Compatibility Guidelines." Policy 290 requires noise studies for projects located "adjacent to existing residential or other sensitive land uses," and that when noise exceeds the state's guidelines, developers must contribute to the cost of noise mitigation measures.

The San Joaquin County General Plan Noise Element states that traffic is the prevalent noise source in the county. The Noise Element focuses on measures to reduce noise, including proper planning (to avoid impacts) and architectural design, use of shielding, and acoustical construction.

The Stanislaus County General Plan Noise Element focuses on areas that exceed current noise guidelines, and notes that "New development of industrial, commercial or other noise generating land uses will not be permitted if the resulting noise levels will exceed 60 L_{dn} (or CNEL) in noise-sensitive areas."

Merced County requires that all new development meet the standards noted in Table 3.9-3 through design or other noise mitigation techniques, and limits construction activities to daytime hours.

3.9.2 Corridor Alternatives

3.9.2.1 Patterson Pass Alternative

This corridor is adjacent and parallel to the Proposed Project corridor from Patterson Pass Road to Butts Road in San Joaquin, Stanislaus, and Merced Counties, and has the same noise characteristics and sensitivity as the Proposed Project for that segment. This alternative has roughly the same number of sensitive receptors as the Proposed Project corridor for the Central Segment, described above; it would be farther away from the residences on the east side of the Proposed Project corridor, but closer to the five residences off of McCabe Road north of the San Joaquin Valley National Cemetery.

3.9.2.2 Butts Road Alternative

The noise characteristics and sensitivity for this alternative are similar to that of the Proposed Project, as it is parallel and adjacent to the Proposed Project corridor up to McCabe Road, where it splits and goes around the west side of O'Neill Forebay rather than the east side. It would travel closer to the San Joaquin Valley National Cemetery, the developed recreation areas on the west side of the O'Neill Forebay, and

several residences off of McCabe Road near the point where the Proposed Project and this alternative corridor cross the road.

3.9.2.3 West of Cemetery Alternative

The noise characteristics and sensitivity for this alternative would be less than the Proposed Project corridor because it is further away from the group of homes off McCabe Road, and further away from the San Luis Creek Campground on O'Neill Forebay. However, this alternative is closer to and just west of the San Joaquin Valley National Cemetery, considered a sensitive noise area.

3.9.2.4 West of O'Neill Forebay 70-kV Alternative

This alternative travels in the same corridor as the Butts Road Alternative corridor from the San Luis Substation to McCabe Road, and then travels in the Proposed Project corridor from McCabe Road to the O'Neill Substation. The noise characteristics and sensitivity of this alternative would be the same as those segments described above.

3.9.2.5 San Luis to Dos Amigos Alternative

This alternative travels adjacent to the Proposed Project, on the west side of the existing transmission lines, rather than on the east, until it meets and joins the Proposed Project at Los Banos Creek Reservoir. The noise characteristics and sensitivity along this corridor would be the same as for the Proposed Project corridor.

3.9.2.6 Billy Wright Road Alternative

This alternative lies to the west of the Proposed Project south of the Los Banos Substation. This alternative corridor would travel on the west side of Los Banos Creek Reservoir, and would avoid the group of homes at Arburua Road. Noise characteristics would be similar to the Proposed Project corridor, but sensitivity would be lower due to the fewer residences along the corridor.

3.10 Paleontological Resources

This section describes the paleontological resources in the study area, which is defined in Section 3.1.

3.10.1 Proposed Project

3.10.1.1 Affected Environment

Paleontological resources are defined in law as fossilized remains or imprints of multi-cellular animals and plants. A fossil is the remnant or trace of an organism of the past, such as a skeleton or leaf imprint. The importance of paleontological resources is subjectively ranked based on the current scientific value of the fossil or imprint. Vertebrate fossils, which include all animals with skeletal backbones such as mammals, birds, reptiles, amphibians, and fishes, are typically less abundant than invertebrate fossils, such as insects and snails. Vertebrates are therefore generally rated more important. However, well-preserved soft-bodied organisms, including worms, insects, spiders, or rare invertebrate fossils, may be considered highly important.

Soils and Paleontological Resources

Paleontological resources are defined by the geologic units in which they are found. Fossils are found in sedimentary rocks, which are typically classified into lithostratigraphic units based on lithology (the physical characteristics of the rocks as an outcrop) rather than biologic characteristics or age. The Diablo Range is underlain by uplifted and intensely deformed Upper Jurassic (150 million years old) and younger rocks of the Franciscan ophiolite complex and the Salinian metamorphic and granitic complex. The Coast Ranges were created by the movements of the major faults in the area, including the nearby San Andreas Fault. They are characterized by elongated topographic and lithologic strips underlain by discrete basement blocks separated by major structural discontinuities (Wakabayashi, 1994). Refer to Section 3.7 (Geology, Soils, and Mineral Resources) for a discussion of the geologic units in the study area, and the Paleontological Resource Report in Appendix G for details on the rock formations found in the study area.

Paleontological Resources in the Study Area

Significant fossil-bearing deposits occur in the Diablo Range along the west side of the San Joaquin Valley. The San Joaquin Valley was part of the Pacific Ocean as recently as 65 million years ago, and the Coast Ranges were a series of islands that isolated whole groups of organisms. These island residents included many rare and unique animals of the Cretaceous Period and of the Oligocene and Miocene Epochs of the Tertiary Period. Some of the fossils recovered from and/or documented in the Diablo Range include mollusks, sharks, bony fish, turtles, sea lions, coral, deer, oysters, horses, weasels, whales, rhinoceros, sponges, bears, and dinosaurs.

Section 3.7 identifies six geologic units along the Proposed Project (see Figures 3.7-1a through 3.7-1d). The portions of the Proposed Project that are underlain by the Q, Alluvium Geological Unit have low paleontological sensitivity, which are in general highly disturbed agricultural or developed areas. All other geographic units underlying the Proposed Project have moderate to high paleontological sensitivity (E, Eocene marine, high; Ep, Paleocene marine, moderate; Ku, Upper Cretaceous Marine, high; M, Miocene marine sedimentary rocks, high; and QPc, Plio-Pleistocene nonmarine, high).

3.10.1.2 Regulations, Plans, and Standards

Activities affecting paleontological resources on federal lands are subject to the Federal Land Policy and Management Act of 1976 (43 U.S.C. §§ 1701 et seq.), which requires public lands to be managed in a manner that protects “scientific qualities” and other values of resources. The Antiquities Act of 1906 (16 U.S.C. §§ 431-433) also requires federal protection for significant paleontological resources on federally owned lands. Additionally, the Paleontological Resources Preservation Act (PRPA) (16 U.S.C. §§ 470aaa et seq.) was recently enacted as a result of the passage of the Omnibus Public Lands Management Act of 2009. The PRPA requires federal land management agencies to manage and protect paleontological resources and affirms the authority of existing policies already in place. Portions of the Proposed Project area traverse lands managed by Reclamation and other federal agencies; therefore, federal laws will apply.

Treatment of paleontological resources under CEQA requires evaluation of resources in the project area; assessment of potential impacts on significant or unique resources; and development of mitigation measures for potentially significant impacts, which may include avoidance, monitoring, or data recovery excavation. Additionally, Public Resource Code (PRC) Section 5097.5 affirms that no person shall willingly or knowingly excavate, remove, or otherwise destroy a vertebrate paleontological site or paleontological feature without the express permission of the overseeing public land agency. The code further states under PRC Section 30244 that any development that would adversely impact paleontological resources shall require reasonable mitigation. These regulations apply to projects located on land owned by or under the jurisdiction of the state or any city, county, district, or other public agency.

3.10.2 Corridor Alternatives

3.10.2.1 Patterson Pass Alternative

The geology of this alternative is nearly identical to that of the Proposed Project, passing through M, Ku and QPc units, and would have the same moderate to high paleontological sensitivity, depending on the level of past disturbance.

3.10.2.2 Butts Road Alternative

The portions of this alternative within the Ku Upper Cretaceous marine unit have high paleontological sensitivity.

3.10.2.3 West of Cemetery Alternative

The portions of this alternative within the Ku Upper Cretaceous marine unit have high paleontological sensitivity.

3.10.2.4 West of O’Neill Forebay 70-kV Alternative

The portions of this alternative within the Ku Upper Cretaceous marine and QPc, Plio-Pleistocene nonmarine units have high paleontological sensitivity.

3.10.2.5 San Luis to Dos Amigos Alternative

This alternative parallels the Proposed Project route from the Los Banos Substation to Los Banos Creek Reservoir. The portions of this alternative within the Ku Upper Cretaceous marine and QPc, Plio-Pleistocene nonmarine units have high paleontological sensitivity.

3.10.2.6 Billy Wright Road Alternative

The entire length of this alternative route is underlain by Upper Cretaceous marine rocks, and therefore, would have a high paleontological sensitivity.

3.11 Public Health and Safety

3.11.1 Proposed Project

This section describes the Public Health and Safety conditions within the study area, which is defined in Section 3.1. Potential hazards to Public Health and Safety that could be caused by the Project include accidents such as worker falls, intentional acts of destruction, wildfires, electrical contact (burns and electrocutions), and Valley Fever (a fungal infection caused by inhaling coccidioides organisms present in the soil). Also addressed in this section are electromagnetic fields (EMF), emergency response, spills or mishandling of hazardous materials or hazardous waste, and use of herbicides.

3.11.1.1 Affected Environment

The Proposed Project corridor is located primarily in open space with limited public access. Where appropriate, structures would be on hilltops or ridges, with the conductors spanning the gullies below. Access to most of the Project is limited to private roads, either within the ROW of existing transmission corridors, or on adjacent private farm and ranchlands. In Alameda and San Joaquin Counties, there are generally no access roads within existing transmission line ROWs on farmland because the entire widths of all the existing ROWs are actively farmed. From a point approximately 2 miles south of Kelso Road, the Proposed Project corridor enters grazing lands, which have very limited access for the entire remainder of its route. This is also the case for the alternative routes further south.

Access roads from the few public paved roads that cross the study area (see Section 3.14, Traffic and Transportation) are generally gated and locked, and often marked with no trespassing signs. Where public roads cross the Proposed Project corridors, adjoining lots are generally fenced to contain grazing animals. Access is restricted into the substations that are interconnected by the Project, and to the portions of the Project that are on state owned or managed lands near the Los Banos Creek Reservoir, San Luis Reservoir and O'Neill Forebay. The public, in general, would not be expected to travel within the Project area at any time.

Hazards to health and safety would primarily affect workers within the ROW, and people who live, work or recreate near the Project area. Hazards to the general public include dust from Project construction or maintenance activities; handling of hazardous materials and waste; wildfires; and congestion or road closures due to construction-related traffic, which could for example block emergency vehicle travel. Also discussed in this section are intentional acts of destruction and potential exposure to electric and magnetic fields. Hazards to workers include all those applicable to the public, plus falls, burns, electrocutions and other accidents.

Emergency Response

Emergency response access is discussed in Traffic and Transportation (sections 3.14 and 4.14). Fires in the Project vicinity would be responded to by local, regional and state firefighting units, many of which are also equipped to provide emergency medical assistance. Local, regional and state fire stations near the Project area are listed below by county in Table 3.11-1.

Medical and police facilities near the Project are located in Tracy, Livermore, Patterson, Gustine, and Los Banos. The public roads in the area are patrolled by the applicable county sheriff and the California Highway Patrol.

Table 3.11-1. Fire Stations in the Project Area

Fire Station	Straight-line Distance from Project Area
Alameda County	
Alameda County Fire Department Station 20, Livermore	12 miles
Livermore – Pleasanton Fire Department Station 8, Livermore	12 miles
Lawrence Livermore National Laboratory Fire Department, Livermore	8.6 miles
San Joaquin County	
Cal Fire Castle Rock Station (Station 26), Tracy	2 miles
City of Tracy Fire Department Station 94 (adjacent to the Cal Fire Station 26), Tracy	2 miles
Stanislaus County:	
West Stanislaus County Fire Protection District Station 4, Vernalis	4.4 miles
West Stanislaus County Fire Protection District Station 3, Westley	3.3 miles
West Stanislaus County Fire Protection District Station 7, Diablo Grande	4.8 miles
West Stanislaus County Fire Protection District Stations 1 and 2, Patterson	3.6 miles
West Stanislaus County Fire Protection District Station 6, Crows Landing	4.9 miles
West Stanislaus County Fire Protection District Station 5, Newman	6.2 miles
Cal Fire Del Puerto Station, Patterson	2 miles
Merced County:	
Gustine Volunteer Fire Department, Gustine	6.3 miles
Cal Fire Station 72, Santa Nella	0.5 miles
Cal Fire Seasonal Station, Los Banos	1 mile
Cal Fire Station 71, Los Banos	8.5 miles
Los Banos Fire Department Station 2, Los Banos	10 miles

Wildfires

The Project area is naturally susceptible to wildfire as a result of the dominant vegetation types and climatic conditions. Fires in the region are generally started either by lightning strikes, accidental ignition such as from campfires, or vandalism. Very few trees exist near the existing or proposed transmission facilities in the Project area, so wildfire would generally burn dried grasses. Grassfires tend to be less intense than a forest fire, but they can still generate enormous amounts of radiant heat. Within the Project area, typical fire hazards include ignition of nearby fuel sources (primarily vegetation) caused by sparks from vehicles, tools, or personnel during construction or maintenance activities.

Hazardous Materials and Hazardous Waste

Hazardous materials hazards could arise from spills of gasoline, diesel fuel, oil, solvents, herbicides or other materials from containers or vehicles. Spills could contaminate soils or leach into ground or surface water, and could be toxic, caustic or acidic. Known storage locations include existing substations (Tracy, San Luis, O'Neill, Los Banos and Dos Amigos). California-designated hazardous waste has been stored at the Tracy Substation. The other substations may store hazardous waste for short periods as allowed by regulations. Western and PG&E apply herbicides along their existing ROWs in the region where vegetation threatens the safe operation of the transmission line and related facilities. Herbicide misuse, over-spray, or drift could adversely affect humans, wildlife, vegetation, or water.

Electrical Hazards

Electrical hazards could include vegetation or equipment fires, electrical burns, or electrocutions to humans or animals. Electrical hazards could occur anywhere near energized conductors or facilities. These hazards are primarily a concern for construction and maintenance workers.

Fall Hazards

Fall hazards could affect individuals working at heights. Elevated work is essential for assembly of transmission structures and for line stringing. Workers typically perform this work from bucket trucks or by climbing structures.

Acts of Intentional Destruction

Electric power transmission facilities are part of the nation's critical infrastructure and are considered to be possible targets of intentional acts of destruction. If targeted, potential threats to the Project could include bombs, aircraft collisions, sabotage of electrical systems by gunshot or other methods, attacks on personnel, or cyber-attack of the facilities' control system.

EMF

Electric power consists of two components: voltage and current. Current, which is a flow of electrical charge measured in amperes, creates a magnetic field. Voltage, which is the force or pressure that causes the current to flow and is measured in units of volts or kV, creates an electric field. Electric fields and magnetic fields considered together are referred to as "EMF." Both fields occur together whenever electricity flows, hence the general practice of considering both as EMF exposure.

Transmission lines, like all electrical devices and equipment, produce EMFs. Electric field strength is usually constant with a given voltage, while magnetic field strength can vary depending on the electrical load, design of the transmission line, and configuration and height of conductors. Both the magnetic field and the electric field decrease rapidly, or attenuate, with distance from the source.

Over the past 25 years, research has not proven that power frequency EMF exposure causes adverse health effects (NIEHS, 2002). However, some non-governmental organizations have set advisory limits as a precautionary measure, based on the knowledge that high field levels (more than 1,000 times the EMF found in typical environments) may induce currents in cells or nerve stimulation. The International Commission on Non-Ionizing Radiation Protection has established a continuous, magnetic field exposure limit of 0.833 Gauss (or 833 milliGauss [mG]) and a continuous electric field exposure limit of 4.2 kilovolts per meter (kV/m) for members of the general public. The American Council of Governmental Industrial Hygienists publishes Threshold Limit Values (TLVs) for various physical agents. The TLV for occupational exposure to 60 Hertz (Hz) magnetic fields has been set as 10 Gauss (10,000 mG) and 25 kV/m for electric fields. Transmission and distribution lines in the United States operate at a frequency of 60 Hz, as do household wiring and appliances.

In the home, EMF exposure comes from circuit breaker and meter boxes, electrical appliances, electric blankets, and any cord or wire that carries electricity. The fields are greatest closest to the surface of the cord or appliance and drop rapidly in just a short distance. Table 3.11-2 shows typical magnetic fields from common household electrical devices.

Sources of existing EMF in the vicinity of the Project area include existing transmission and distribution lines, distribution feeds to homes and businesses, commercial wiring and equipment, and common household wiring and appliances for residences and communities in the area. EMF levels in homes and businesses vary widely with wiring configurations, the types of equipment and appliances in use, and proximity to these sources.

3.11.1.2 Regulations, Plans, and Standards

Occupational Safety and Health Act of 1970

Under authority granted in the Occupational Safety and Health Act of 1970, the Occupational Safety and Health Administration (OSHA) assures safe and healthful working conditions by setting and enforcing standards and by providing training, outreach, education and assistance. OSHA has set standards for all facets of work conditions, including for safety-related personnel protective equipment, heat exposure, toxic chemical handling and exposure, noise exposure, and working at heights. The California Department of Industrial Relations administers the California State Plan, commonly referred to as Cal/OSHA, which is identical to the Federal OSHA regulations. Cal/OSHA regulations apply to all public and private sector places of employment in the state with the exception of federal government employees, private sector workers on federal government and Native American lands, and employers that require federal security clearances. Cal/OSHA would not be applicable to work within a Western easement, but would be applicable for work done by non-federal employees at facilities of investor-owned utilities in California.

Title 49 of the Code of Federal Regulations (49 CFR), Section 171.8

Transportation, handling, storage and cleanup of hazardous materials is covered under Title 49 of the Code of Federal Regulations (49 CFR), Section 171.8. Any substance or material that is capable of causing an unreasonable risk to human health or safety or the environment when transported by vehicle, used incorrectly, or not properly stored or contained, is a hazardous material. Examples include explosives, flammables, corrosives, radioactive materials, and poisons. Regulations pertaining to transportation of such materials are enforced by the CHP and DOT.

Resource Conservation and Recovery Act

Federal regulations governing handling, storage, disposal and cleanup of hazardous wastes are primarily authorized by Resource Conservation and Recovery Act (RCRA) 42 U.S.C. § 6901, *et seq.* The hazardous waste program, under RCRA Subtitle C, establishes a system for controlling hazardous waste from the time it is generated until its ultimate disposal. EPA has delegated enforcement of hazardous waste laws in California to the California Department of Toxic Substances Control (DTSC), which regulates the handling, storage, disposal and cleanup of hazardous wastes; DTSC in turn has delegated this authority to local Certified Unified Planning Agencies.

Table 3.11-2. Typical 60 Hertz Magnetic Field Values from Common Electrical Devices

Appliance	Magnetic Field 6 Inches from Device (mG)	Magnetic Field 2 Feet from Device (mG)
Washing machine	20	1
Vacuum cleaner	300	10
Electric oven	9	—
Dishwasher	20	4
Microwave oven	200	10
Hair dryer	300	—
Computer desktop	14	2
Fluorescent light	40	2

Source: NIEHS 2002

Hazardous Waste Control Law, California Health and Safety Code Section 25100 et seq./22 CCR)

The California Department of Toxic Substances Control (DTSC) has primary regulatory responsibility, with delegation of enforcement to local jurisdictions that enter into agreements with the state agency, for the generation, transport and disposal of hazardous wastes under the authority of the Hazardous Waste Control Law (HWCL). Regulations implementing the HWCL list 791 hazardous chemicals and 20 or 30 more common substances that may be hazardous; establish criteria for identifying, packaging and labeling hazardous substances; prescribe management of hazardous substances; establish permit requirements for hazardous waste treatment, storage, disposal and transportation; and identify hazardous wastes that cannot be deposited in landfills. HWCL requires that the generator of a hazardous waste must complete a manifest that accompanies the waste from the point of generation to the ultimate treatment, storage or disposal location. The manifest describes the waste, its intended destination, and other regulatory information about the waste. Copies must be filed with the DTSC. Generators must also match copies of waste manifests with receipts from the treatment, storage or disposal facility to which it sends waste.

EMF Standards

No Federal regulations have established environmental limits on the strengths of fields from power lines. However, the Federal government continues to conduct and encourage research on the EMF issue. The State of California Department of Education enacted regulations that require minimum distances between a new school and the edge of a transmission line ROW. The setback distances are 100 feet from the edge of the transmission line ROW for 50-kV to 133-kV lines, 150 feet from the edge of the transmission line ROW for 220-kV to 230-kV lines, and 350 feet from the edge of the transmission line ROW for 500-kV to 550-kV lines. These distances were not based on specific biological evidence, but on the known fact that fields from power lines drop to near background levels at those distances. Western follows field-reducing guidelines for designing new and upgraded transmission lines. California has no other rules governing EMF.

3.11.2 Corridor Alternatives

All corridor alternatives have the same affected environment as the Proposed Project.

3.12 Recreation

3.12.1 Proposed Project

3.12.1.1 Affected Environment

Overview

The recreation study area includes the Project study area (see definition of Project study area in Section 3.1) as well as any established recreation areas adjacent to the Project study area. The recreation study area includes primarily unincorporated areas within Alameda, San Joaquin, Stanislaus, and Merced Counties with the exception of federal and state land surrounding the O'Neill Forebay, San Luis Reservoir, and Los Banos Creek Reservoir.

The study area lies to the west of I-5. Several secondary roads extend from the I-5 corridor and provide primary access points to recreation areas located in the foothills to the west of the Proposed Project. Recreation areas accessed from the I-5 corridor include the Frank Raines Off-Highway Vehicle (OHV) Park, Carnegie State Vehicular Recreation Area, and Corral Hollow Ecological Preserve.

Dispersed recreational activities may occur on private land or local jurisdiction lands within the study area. However, there are no county or other local jurisdiction designated recreation areas located within the study area. Most recreation use in the study area occurs on federal and state land as discussed below.

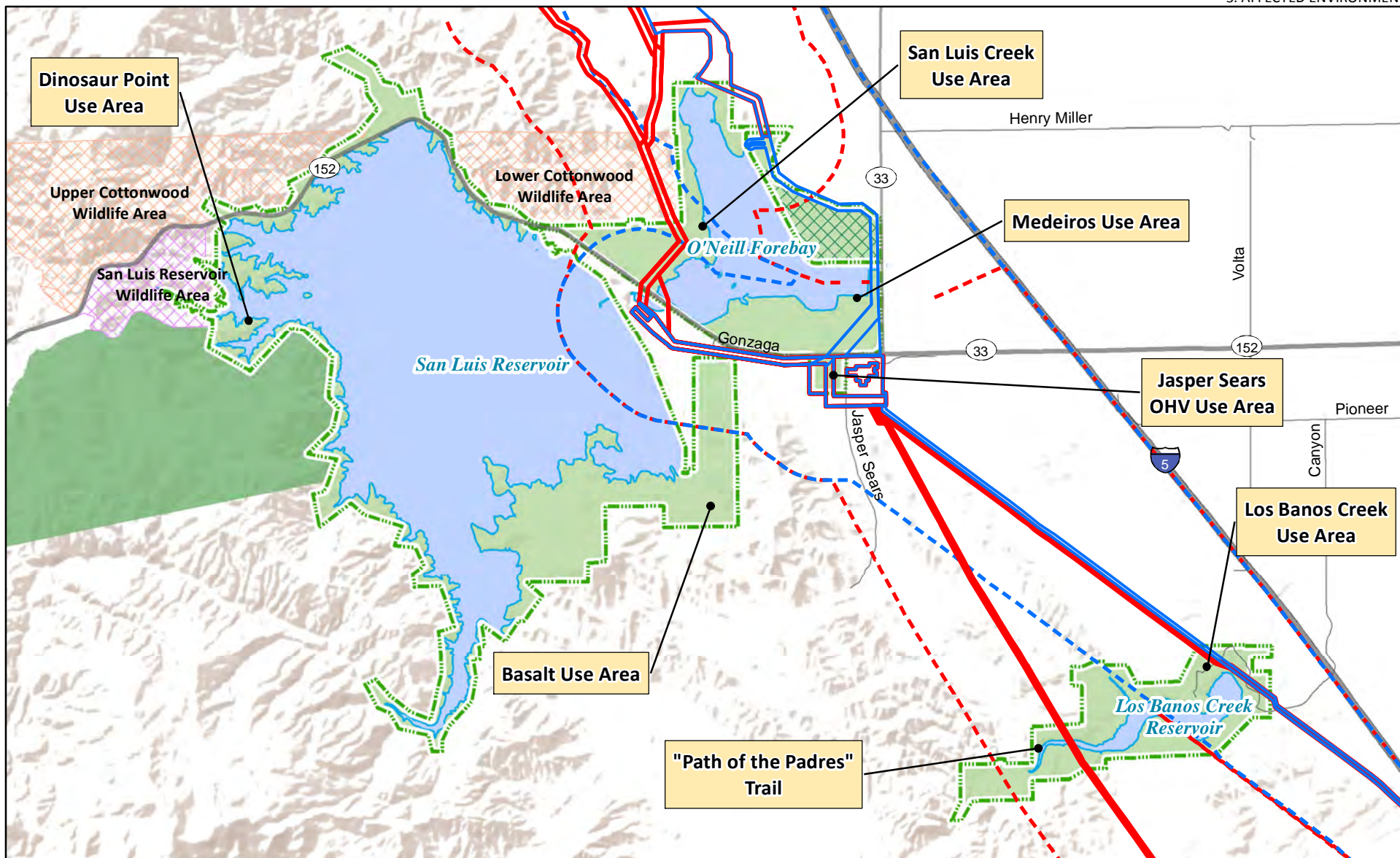
Federal and state recreation areas within the study area are the San Luis Reservoir State Recreation Area (SRA) (including facilities at San Luis Reservoir, O'Neill Forebay, and Los Banos Creek Reservoir) and California Department of Fish and Wildlife (CDFW) wildlife areas (the Lower Cottonwood Wildlife Area and the O'Neill Forebay Wildlife Area). There are no federally or state-designated wilderness areas within the study area. Figure 3.12-1 was adapted from the SLRSRA RMP/GP and provides an overview of the study area and recreation resources on federal and state land.

San Luis Reservoir State Recreation Area

The San Luis Reservoir SRA is the largest recreation area within the study area. The SRA consists of two geographically separate areas, one surrounding San Luis Reservoir and O'Neill Forebay, and the other around Los Banos Creek Reservoir (see Figure 3.12-1). The total area is over 27,000 acres of which 15,395 acres are surface waters of the San Luis Reservoir, O'Neill Forebay, and Los Banos Creek Reservoir.

Reclamation owns most of the land within the SRA. However, these lands are managed by the California Department of Parks and Recreation (CDPR), CDFW, and DWR. The O'Neill Forebay Wildlife Area and San Luis Wildlife Area were set aside by Reclamation for wildlife preservation and mitigation. These wildlife areas are on Reclamation land and fall within the SRA boundary, but are managed by CDFW. The designated recreation areas within the SRA are under the management of CDPR and discussed below. Figure 3.12-1 illustrates land management and ownership.

The SLRSRA RMP/GP was prepared by CDPR and Reclamation in June 2013. The RMP/GP anticipates increased future visitation to the SLRSRA by providing for physical additions and visitor use modifications concentrated in and around existing developed areas. Campsites would be added in Basalt, San Luis Creek, Medeiros, and Los Banos Creek use areas, and the variety of camping opportunities would be increased. Campsites would also be added at the Jasper Sears OHV Use Area and Dinosaur Point (where none currently exist). The RMP/GP also identifies new trails and trailside facilities that would accommodate a greater variety of recreational opportunities.



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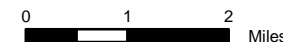
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Source: WAPA SNR, Aspen EG, CDFW, California State Parks

- Proposed Project Corridor
- Corridor Alternatives
- Proposed Project Study Area
- Alternatives Study Area
- San Luis Reservoir State Recreation Area
- Pacheco State Park

- Waterbody
- CDFW Owned and Operated Lands
- Cottonwood Creek Wildlife Area
- O'Neill Forebay Wildlife Area
- San Luis Reservoir Wildlife Area

Figure 3.12-1

Recreation Study Area



Most recreation visits to the SRA occur between April and September of each year. The average attendance between fiscal year 2005-2006 and fiscal year 2010-2011 was just over 327,000 people. The highest frequency of visitors occurs on weekends and holidays between April and September, during which public use areas often reach their maximum capacity (BOR, 2013).

The existing SRA provides recreational opportunities including but not limited to fishing, boating, camping, hiking, OHV use, windsurfing, horseback riding, day use, and guided tours. Fishing is the most popular recreation activity within the SRA. Water-based recreation is allowed on all three waterbodies within the SRA in accordance with speed limits and access restrictions. Boating is permitted from 6 a.m. to sunset. Land-based recreation is provided in five waterside use areas: San Luis Creek, Medeiros, Basalt, Dinosaur Point, and Los Banos Creek. A sixth use area, the Jasper Sears OHV Use Area, is designated for OHV use. San Luis Creek and Basalt are the most popular use areas. There are up to 40,000 visitors a month to the San Luis Creek Use Area during peak use (California State Parks, 2004).

Table 3.12-1 lists the primary recreational opportunities within each use area designated within the San Luis Reservoir SRA. Locations of the recreational use areas listed below are shown in Figure 3.12-1.

Table 3.12-1. Designated Use Areas Within the San Luis Reservoir SRA

Use Area	Primary Activities
San Luis Creek Use Area	Fishing, windsurfing, swimming, boating, camping, day use, group activities
Medeiros Use Area	Fishing, windsurfing, camping, day use
Basalt Use Area	Fishing, camping, hiking, boating, day use
Los Banos Creek Use Area	Fishing, boating, camping, hiking, horseback riding
Dinosaur Point Use Area	Fishing, boating, day use
Jasper Sears OHV Use Area	OHV use

Source: San Luis Reservoir State Recreation Area Resource Management Plan, 2013

Jasper Sears OHV Use Area. The Jasper Sears OHV Use Area is located south of SR 152 and the Medeiros Use Area, adjacent to the Los Banos Substation. The OHV Use Area is an open, flat, partially vegetated 150-acre parcel with several OHV tracks consisting of unpaved trails. The use area also has two picnic tables with shade ramadas, a parking lot with two vehicle loading ramps, and chemical toilets. In accordance with emission standards regulations for OHVs, Red Sticker OHVs (non-compliant vehicles designated by the California Air Resources Board) are seasonally restricted at the Jasper Sears OHV Use Area. The main entrance to the OHV Use Area is off of Jasper Sears Road and includes an open, un-paved parking area. With fairly flat terrain in comparison to other nearby OHV areas, this track provides an ideal location for beginner riders. Therefore, the Jasper Sears OHV Use Area provides a unique, regionally important resource. Visitors are typically from the San Joaquin Valley or from the greater San Francisco Bay Area.

The SLRSRA GP/RMP provides for minor additions to existing facilities such as shade ramadas, vault toilets, and minor infrastructure at the OHV Use Area. The GP/RMP also provides for the potential for future expansion of the OHV Use Area yet notes a current lack of available land for expansion.

Medeiros Use Area. The Medeiros Use Area is located on the southeastern shore of O'Neill Forebay. The area provides 50 campsites with shade ramadas, picnic tables, and barbecues, approximately 300 informal parking spaces, as well as approximately 350 primitive campsites for tents and RVs. The day use and camping areas have potable water from four portable water tanks, and chemical toilets. The boat launch at the Medeiros Use Area was closed in 2001 for security reasons. Although security is no longer a concern, the boat launch remains closed because shallow water in the area prevents year-

round launching. However, the SLRSRA RMP/GP provides for possible enhancements to allow reopening/relocating the boat ramp as well as adding a parking lot and restrooms near the boat launch. An additional 200 new tent and RV sites and 100 primitive campsites would be added to the campground as well as and a restroom shelter with parking. The RMP/GP also provides for a conversion of the existing recreation zoning designation to accommodate additional visitation to this use area.

Access Points. SR 152 and SR 33 are the main access roads into the SRA in the area around the San Luis Reservoir and the O'Neill Forebay. Canyon Road, which extends from the I-5 corridor, is the main access road into the SRA in the area around the Los Banos Reservoir. Four vehicular access points, including gated entrance stations, are located at the edge of the Basalt, Los Banos Creek, Medeiros, and San Luis Creek use areas. Entrance stations are staffed during the peak season when funding is available. Self-registration is used to collect fees at other times.

Visitor Center. A visitor center at the Romero Overlook provides educational information on the local reservoirs and dams, and statewide water projects through audio-visual and printed materials. The Romero Visitor Center is administered by DWR and is located on joint DWR and CDPH managed land within the SLRSRA.

Campgrounds. The SLRSRA has four developed campgrounds open year-round for public use. Table 3.12-2 provides the name, location, and characteristics of each developed campground.

Table 3.12-2. Developed Campgrounds Within the San Luis Reservoir SRA

Campground	Location (Use Area)	Number of Campsites	Amenities
Basalt Campground	Basalt Use Area	79 developed sites	<ul style="list-style-type: none">RestroomsFire RingPicnic Table
San Luis Creek Campground	San Luis Creek Use Area	53 developed sites	<ul style="list-style-type: none">RestroomsElectric and Water HookupLevel PadFire RingPicnic TableWaste Disposal
Medeiros Campground	Medeiros Use Area	50 developed sites 350 primitive sites	<ul style="list-style-type: none">Potable waterChemical ToiletsBoat Launch
Los Banos Creek Campground	Los Banos Creek Use Area	20 primitive sites	<ul style="list-style-type: none">BarbequePicnic TableBoat Launch

Source: <http://www.parks.ca.gov/>

Path of the Padres. The Path of the Padres is a popular trail along Los Banos Creek above the Los Banos Creek Reservoir. CDPH staff conducts guided hikes during weekends in March and April. The boat tour and 5-mile hike retraces part of the trail taken by Spanish missionaries in the early 1800s to travel between the Central Valley and the mission San Juan Bautista. The route follows a lakeshore trail that runs around Salt Springs Cove at the northeast end of the Los Banos Creek Reservoir and follows the edge of the Reservoir. Due to its recreational and cultural significance, the Path of the Padres has been established as a locally important resource attracting numerous visitors every year.

Other Designated Trails. The Lone Oak Bay Trail is a 3-mile trail that follows the southeastern edge of the San Luis Reservoir in the Basalt Use Area. It is a popular trail that provides year-round opportunity for sight-seeing, bird-watching, and nature study. In the spring and summer months the trail is often used for wildflower viewing.

The Basalt Campground Trail is a 1.5-mile loop trail that begins and ends at the Basalt Campground. The trail provides access to a viewpoint that overlooks the San Luis Reservoir, San Joaquin Valley, and Basalt Hill. An interpretive exhibit displays a map that points out the highlights visible from the viewpoint.

DFW Wildlife Areas

There are two DFW-managed wildlife areas within the study area. The wildlife areas are primarily designated for wildlife management although they also provide a variety of year-round recreational opportunities (described below). Access to these areas is limited to foot travel. Special restrictions on recreation use within the wildlife areas are subject to change and published in CDFW's annual informational memorandum, *Hunting and Other Public Uses on State and Federal Lands*. The locations of the wildlife areas are shown in Figure 3.12-1.

O'Neill Forebay Wildlife Area. The O'Neill Forebay Wildlife Area consists of 700 acres along the east side of the O'Neill Forebay. The wildlife area is accessible from a parking area off SR 33. Recreation activities in this area include hunting, nature study, and hiking. Hunting is limited to waterfowl, pheasants, quail, doves, rabbits, and crows.

Lower Cottonwood Wildlife Area. The Lower Cottonwood Wildlife Area consists of 2,000 acres located on the north side of SR 152 adjacent to the SLRSRA. The main access point to the wildlife area is from SR 152 through the San Luis Creek Use Area. Year-round recreational activities include bird-watching, sightseeing, picnicking, and nature study. Hunting is permitted during daylight hours from the start of the deer season, designated by CDFW and subject to change based on current conditions, through the last Sunday in January. Outside of the designated hunting season, all firearms are prohibited. Camping is prohibited within the Wildlife Area.

3.12.1.2 Regulations, Plans, and Standards

Regulations, plans and standards include the following:

- San Luis Reservoir State Recreation Area Resource Management Plan and General Plan (June 2013) provides goals and guidelines for management of the SLRSRA and adjacent lands. The Plan Area consists of two geographically separate areas totaling over 27,000 acres in the vicinity of Los Banos, California. The Plan Area includes the water surfaces of San Luis Reservoir, O'Neill Forebay, and Los Banos Creek Reservoir, as well as adjacent recreation lands.
- California Outdoor Recreation Plan (CORP) 2008 is the statewide master plan for parks, outdoor recreation, and open space for California. The CORP is also the primary tool for prioritizing Land and Water Conservation Fund grant allocations to local governments.

3.12.2 Corridor Alternatives

3.12.2.1 Patterson Pass Road Alternative

The recreation resources within this study area will be similar to that of the Central Segment of the Proposed Project. There are no federal or state designated recreation areas in this area.

3.12.2.2 Butts Road Alternative

Major recreation areas in this alternative study area are the SLRSRA and the Lower Cottonwood Wildlife Area as described in 3.12.1.1.

3.12.2.3 West of Cemetery Alternative

The major recreation areas in this alternative study area are the SLRSRA and the Lower Cottonwood Wildlife Area as described in 3.12.1.1.

3.12.2.4 West of O'Neill Forebay 70-kV Alternative

Recreation areas within this alternative study area are the SLRSRA and the Lower Cottonwood Wildlife Area as described in 3.12.1.1.

3.12.2.5 Los Banos to Dos Amigos Alternative

Recreation areas within this alternative study area are the SLRSRA, as described in Section 3.12.1.1.

3.12.2.6 Billy Wright Road Alternative

Recreation areas within this alternative study area are the SLRSRA, including the Path of the Padres Trail, as described in Section 3.12.1.1.

3.13 Socioeconomics

3.13.1 Proposed Project

3.13.1.1 Affected Environment

Study Area

Socioeconomic analysis is considered on a county level to reflect regional social and economic trends. The study area for socioeconomics consists of counties traversed by the Proposed Project corridor including Alameda, San Joaquin, Stanislaus, and Merced. The Proposed Project corridor primarily traverses sparsely populated, unincorporated areas of the four counties with the exception of moderate density development in the North Segment of the Proposed Project near the Tracy Substation and a small area northeast of the O'Neill Substation.

Overview

Alameda County. The Project area covers about 4 linear miles within Alameda County along its northeasternmost edge. This portion of Alameda County falls within the San Joaquin Valley and is geographically separated by the Diablo Range and Altamont Pass from the more densely populated western portion of the county. As a result, the socioeconomic characteristics of this portion of Alameda County are more similar to San Joaquin County than to the remainder of Alameda County. Overall, Alameda County includes 14 incorporated cities and six unincorporated communities and rural areas throughout its 813 square miles. The incorporated cities are Alameda, Albany, Berkeley, Dublin, Emeryville, Fremont, Hayward, Livermore, Newark, Oakland, Piedmont, Pleasanton, San Leandro, and Union City, located primarily in western Alameda County. The unincorporated communities are Ashland, Castro Valley, Cherryland, Fairview, San Lorenzo, and Sunol.

San Joaquin County. The Proposed Project corridor crosses central San Joaquin County. San Joaquin County covers 1,400 square miles and has seven incorporated cities: Escalon, Lathrop, Lodi, Manteca, Ripon, Stockton, and Tracy. Census data indicate that 146,146 people live in unincorporated communities within San Joaquin County. Stockton is the largest city, with a population of 300,899.

Stanislaus County. Stanislaus County covers 1,494 square miles and has nine incorporated cities: Ceres, Hughson, Modesto, Newman, Oakdale, Patterson, Riverbank, Turlock, and Waterford. Additionally, 13 unincorporated communities are within Stanislaus County. Modesto is the largest city, with a population of 211,536.

Merced County. Merced County covers 1,980 square miles and includes six incorporated cities: Atwater, Livingston, Los Banos, Merced, Gustine, and Dos Palos; and 11 unincorporated communities: Castle, Delhi, Franklin/Beachwood, Fox Hills, Hilmar, Le Grand, Planada, Santa Nella, University, the Villages of Laguna San Luis, and Winton. Merced is the largest city, with a population of 80,793.

Characterization

Population, housing, labor force, and employment characteristics within the study area are described below to provide a baseline for determining the impacts of the temporary workforce associated with the Proposed Project on the regional socioeconomic conditions.

Population. Table 3.13-1 presents the total population and demographic make-up of each county in the study area based on the U.S. Census Survey from 2000 and 2010. Alameda County has the highest

population; however as noted above, much of the population is concentrated in the western portion of the County distant from the Proposed Project corridor. Overall, Merced County has the smallest population, but it has had the highest percent increase in population between 2000 and 2010. The percent increase in population of San Joaquin County and Stanislaus County is also well above that of the State of California.

Table 3.13-1. Population Characteristics

Geography	California	Alameda County	San Joaquin County	Stanislaus County	Merced County
Total Population (2000)	33,871,653	1,443,741	563,598	446,997	210,554
Total Population (2010)	37,253,956	1,510,271	685,306	514,453	255,793
Population Change	10.0%	4.6%	21.6%	15.1%	21.5%

Source: U.S. Census Bureau

Housing. Table 3.13-2 presents housing unit and vacancy rate data from the 2010 U.S. Census for Alameda, San Joaquin, Stanislaus, and Merced Counties. Merced County has the lowest number of housing units and the highest vacancy rate. Alameda County has the highest number of housing units and the lowest vacancy rate.

Table 3.13-2. Housing Characteristics

County	2010 Housing Units	2010 Occupied Housing Units	Vacancy Rate	Persons Per Household
Alameda	588,948	551,150	6.4%	2.78
San Joaquin	236,943	217,956	8.0%	3.20
Stanislaus	180,165	165,790	8.0%	3.14
Merced	84,298	76,190	9.6%	3.39

Source: California Department of Finance, 2010

Labor Force. Table 3.13-3 presents the labor force characteristics within Alameda, San Joaquin, Stanislaus, and Merced Counties including the civilian labor force and unemployment rate obtained from the California Employment Development Department (EDD).

The terms in Table 3.13-3 are defined as follows by the California EDD:

- Civilian Labor Force: The sum of civilian employment and civilian unemployment.
- Civilian Employment: All individuals who worked during the week including the 12th of the month.
- Civilian Unemployment: Individuals who were not working but were able, available, and actively looking for work.
- Unemployment Rate: The percent of those unemployed out of the total labor force.

Table 3.13-3. Employment Characteristics

Labor Force	Alameda County	San Joaquin County	Stanislaus County	Merced County
Civilian Labor Force	778,300	299,900	239,000	111,400
Civilian Employment	708,600	254,900	208,700	95,400
Civilian Unemployment	69,700	45,100	30,300	16,000
Civilian Unemployment Rate	9.0%	15.0%	12.7%	14.4%

Note: Individuals who have more than one job are counted only once.

Source: California Employment Development Department, 2013

As shown in Table 3.13-3 Alameda County has the largest civilian workforce along with the lowest unemployment rate (9.0 percent). In contrast, San Joaquin County has the second largest civilian workforce and the highest unemployment rate (15.0 percent).

3.13.1.2 Regulations, Plans, and Standards

National Environmental Policy Act (NEPA) requires that potential socioeconomic impacts be identified for projects that have a federal component (i.e., either a Federal Agency action or funding).

3.13.2 Corridor Alternatives

3.13.2.1 Patterson Pass Road Alternative

This study area includes Alameda, San Joaquin, Stanislaus, and Merced Counties. The regional trends and characteristics in terms of population, housing, and employment are similar to that described for the Proposed Project.

3.13.2.2 Butts Road Alternative

This alternative is located in Merced County. Existing conditions for this alternative reflect only the socioeconomic characteristics described for Merced County.

3.13.2.3 West of Cemetery Alternative

This alternative is located in Merced County and does not cross Alameda, Stanislaus, or San Joaquin Counties. Therefore, the existing conditions for this alternative reflect only the socioeconomic characteristics described for Merced County.

3.13.2.4 West of O'Neill Forebay 70-kV Alternative

This alternative is located in Merced County and does not cross Alameda, Stanislaus, or San Joaquin Counties. Therefore, the existing conditions for this alternative reflect only the socioeconomic characteristics described for Merced County.

3.13.2.5 San Luis to Dos Amigos Alternative

This alternative is located in Merced County and does not cross Alameda, Stanislaus, or San Joaquin Counties. Therefore, the existing conditions for this alternative reflect only the socioeconomic characteristics described for Merced County.

3.13.2.6 Billy Wright Road Alternative

This alternative is located in Merced County and does not cross Alameda, Stanislaus, or San Joaquin Counties. Therefore, the existing conditions for this alternative reflect only the socioeconomic characteristics described for Merced County.

3.14 Traffic and Transportation

3.14.1 Proposed Project

3.14.1.1 Affected Environment

The Proposed Project corridor is located primarily in open space with limited access. The corridor roughly parallels segments of two interstate highways, I-580 and I-5, which generally border the eastern edge of the study area (refer to Section 3.1 for a definition of the study area). I-5 runs the entire length of the state, from Oregon border to the Mexico border, and I-580 provides a major interconnection from I-5 into the greater San Francisco Bay region. Several county roads run east-west through the Proposed Project study area, as does SR 152, which connects the San Joaquin Valley region with the South San Francisco Bay and Monterey Bay regions. From east to west, SR 152 travels from SR 99 through Los Banos, intersecting with I-5 near the O'Neill Forebay, and then on to intersect with U.S. 101 in Gilroy, and Highway 1 in Watsonville. SR 152 provides access to important recreation areas in the Coast Ranges, and interconnects Fresno, Modesto, Hollister, Monterey, Santa Cruz, Castroville, and surrounding areas. SR 33 (Santa Nella Road) is a well-used road that provides a shorter route for southbound I-5 travelers onto westbound SR 152. SR 152 crosses over O'Neill Forebay at the O'Neill Dam.

The Proposed Project corridor would cross over several major highways and many smaller roads, as shown in Figures 3.14-1a through 3.14-1d. From the Tracy Substation, the corridor would parallel two major existing transmission lines, and the Delta Mendota Canal and California Aqueduct. It would cross over Kelso, Mountain House and W. Grant Line roads, which are the only roads crossed in Alameda County. In San Joaquin County, the corridors cross I-205 and I-580 near the intersection of those two highways, then West Patterson Pass Road, the Union Pacific Railroad tracks, Corral Hollow Road (County Highway J2), and numerous private access roads to area wind farms and cattle ranches, such as South Bird Road.

In Stanislaus County, the Proposed Project would cross Ingram Creek Road, Del Puerto Canyon Road, Diablo Grande Parkway, Oak Flat Road, Orestimba Road, Pete Miller Road, Sullivan Road, Butts Road, McCabe Road (which provides access to the San Joaquin Valley National Cemetery) and several private ranch access roads. The Proposed Project corridor traverses the east side of O'Neill Forebay, and crosses the access road to the O'Neill Pumping-Generating Plant and Substation. It then turns eastward for a short distance paralleling the Delta-Mendota Canal, and then turns south, paralleling Santa Nella Road (SR 33) in a corridor about 300 feet to the west of the road. It then crosses SR 152 and enters the Los Banos Substation area.

The Proposed Project corridor then runs to the west, crossing Jasper Sears Road, Los Banos CDF Road, Basalt Road, two roads used to access the various facilities located between the O'Neill Forebay and the San Luis Reservoir, and into the San Luis Substation. The proposed corridor then goes back to a point near the Los Banos Substation, and then turns southeast towards the Dos Amigos Substation. It crosses Billy Wright Road and twice crosses Canyon Road (which is used to access the Los Banos Creek Reservoir recreation areas), continues southeast for another 7 miles and then turns northeast to cross I-5 into the Dos Amigos Substation. The condition of the paved public roadways that the Proposed Project would cross is shown in Table 3.14-1.

Table 3.14-1. Public Paved Roads Crossed by the Proposed Project

Roadway	Number of Lanes	Shoulders	Existing Road Condition ¹
North Segment			
Kelso Road	2	Yes	Good

Table 3.14-1. Public Paved Roads Crossed by the Proposed Project

Roadway	Number of Lanes	Shoulders	Existing Road Condition¹
Mountain House Road	2	Yes	Excellent
W. Grant Line Road	2	Yes	Good/Excellent
Interstate 205	4–6	Yes	Excellent
Interstate 580	8	Yes	Excellent
W. Patterson Pass Road	2	No	Good
Central Segment			
Corral Hollow Road (Rte. J2)	2	No	Good
Del Puerto Canyon Road	2	No	Good
Diablo Grande Parkway	2	Yes	Excellent
Oak Flat Road	2	No	Fair
San Luis Segment			
McCabe Road	2	No	Good
SR 152	4	Yes	Excellent
Gonzaga Road	2	No	Good
Basalt Road	2	No	Good
South Segment			
Canyon Road	2	No	Good
Arburua Road	2	No	Good
Interstate 5	6–10	Yes	Excellent
Poleline Road	2	No	Good

1 - Roadway Condition Ratings:

Excellent—pavement in good condition, exhibits good geometrics (i.e., the road is straight and it has large curves to allow cars to maintain their speed while going around the curves), and it has good shoulders.

Good—pavement in pretty good shape, some patching of the roadway, shoulders not well maintained, road able to handle project traffic.

Fair—very patched road is starting to deteriorate, could potentially be affected by the project.

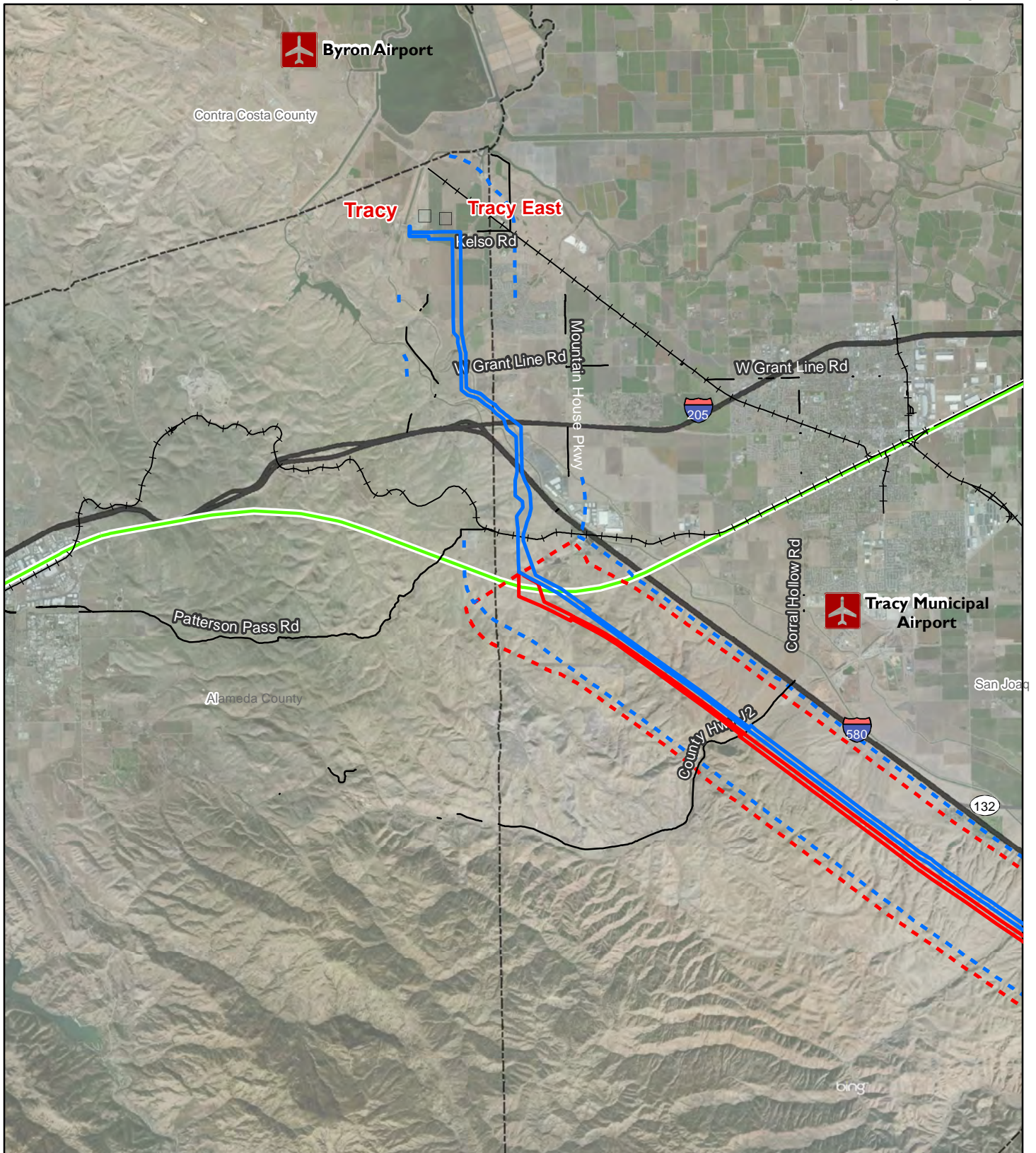
Poor—many visible potholes and would definitely be adversely affected by the project.

Many if not all these roads would be used to access the corridors for preconstruction, construction and maintenance activities. An encroachment permit would be needed where proposed power lines cross interstate, state and county highways, and easements may be needed for use of private roads.

Existing Roadway Conditions

Existing and potential future deficiencies in a regional road network are defined in terms of Level of Service (LOS) ranked from A through F. LOS describes existing or predicted traffic flow conditions at a given location in relation to the capacity of the roadway in terms of speed and travel time, volume and capacity, traffic interruptions, and safety. LOS A designates a segment where traffic flows completely unimpacted, and LOS F designates areas with persistent traffic jams. Caltrans sets the LOS standard for individual state and interstate highways roads throughout the state, while counties and cities set LOS standards for local roads in any given region.

Because of their importance in connecting the major commerce centers of the state, I-5 and I-580 are both part of the state's Interregional Road System. Caltrans generally sets acceptable LOS levels for interstate highways as LOS D for rural areas and LOS E for urban areas. But for Interregional Road System highways, Caltrans sets LOS C as the standard or "concept" LOS for rural areas, and LOS D for urban areas. Caltrans has set the thresholds at LOS C for SR 152 and LOS D for SR 33.



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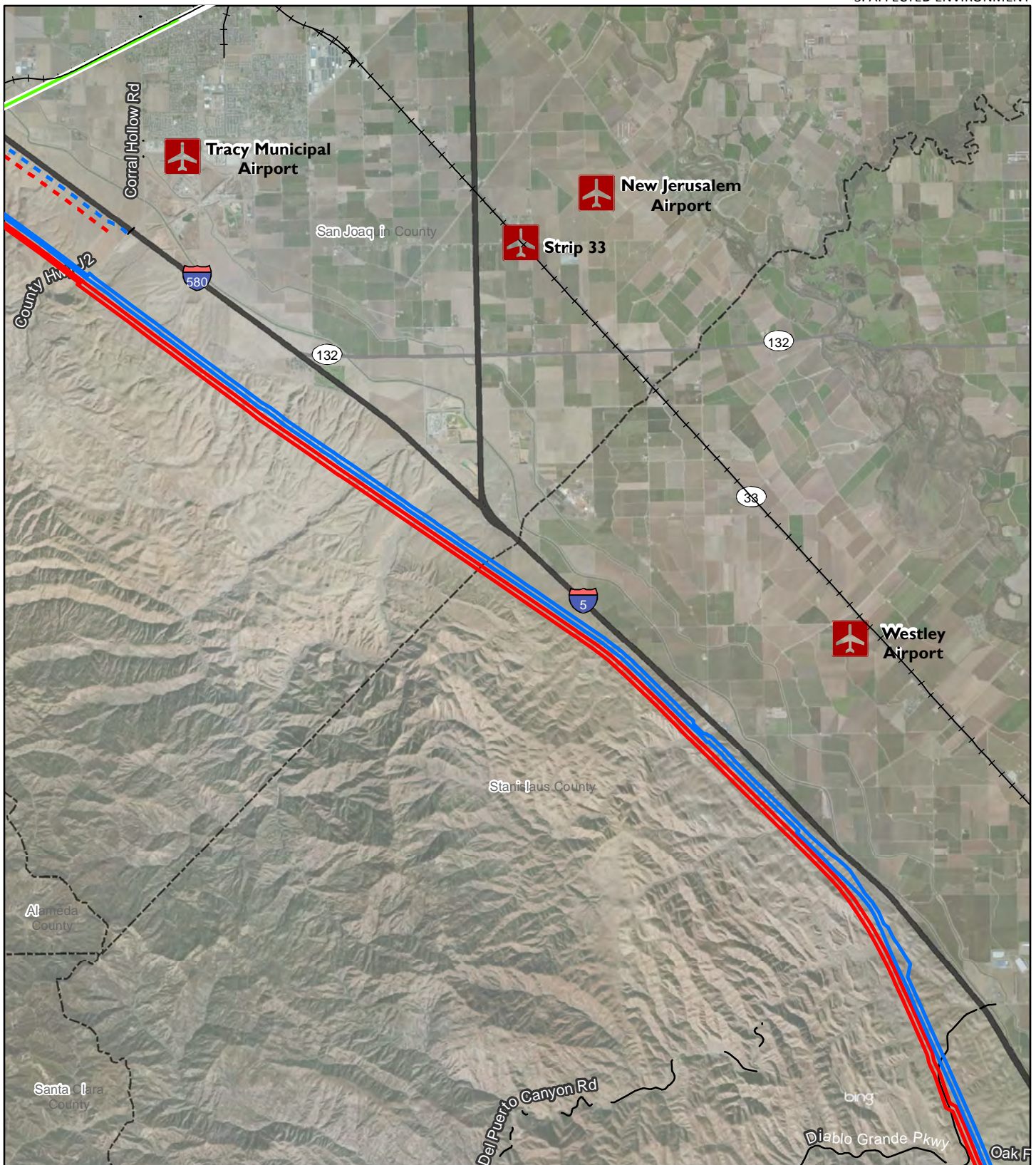
- Substations
- Proposed New Substations
- Proposed Project Corridor
- Corridor Alternatives
- Proposed Project Study Area
- Alternatives Study Area

- +— Union Pacific Railroad
- Major Highways
- Major Roads
- California High Speed Rail Alignment
- ✈ Airport

Figure 3.14-1a
Regional
Transportation
Network

0 1.5 3 Miles





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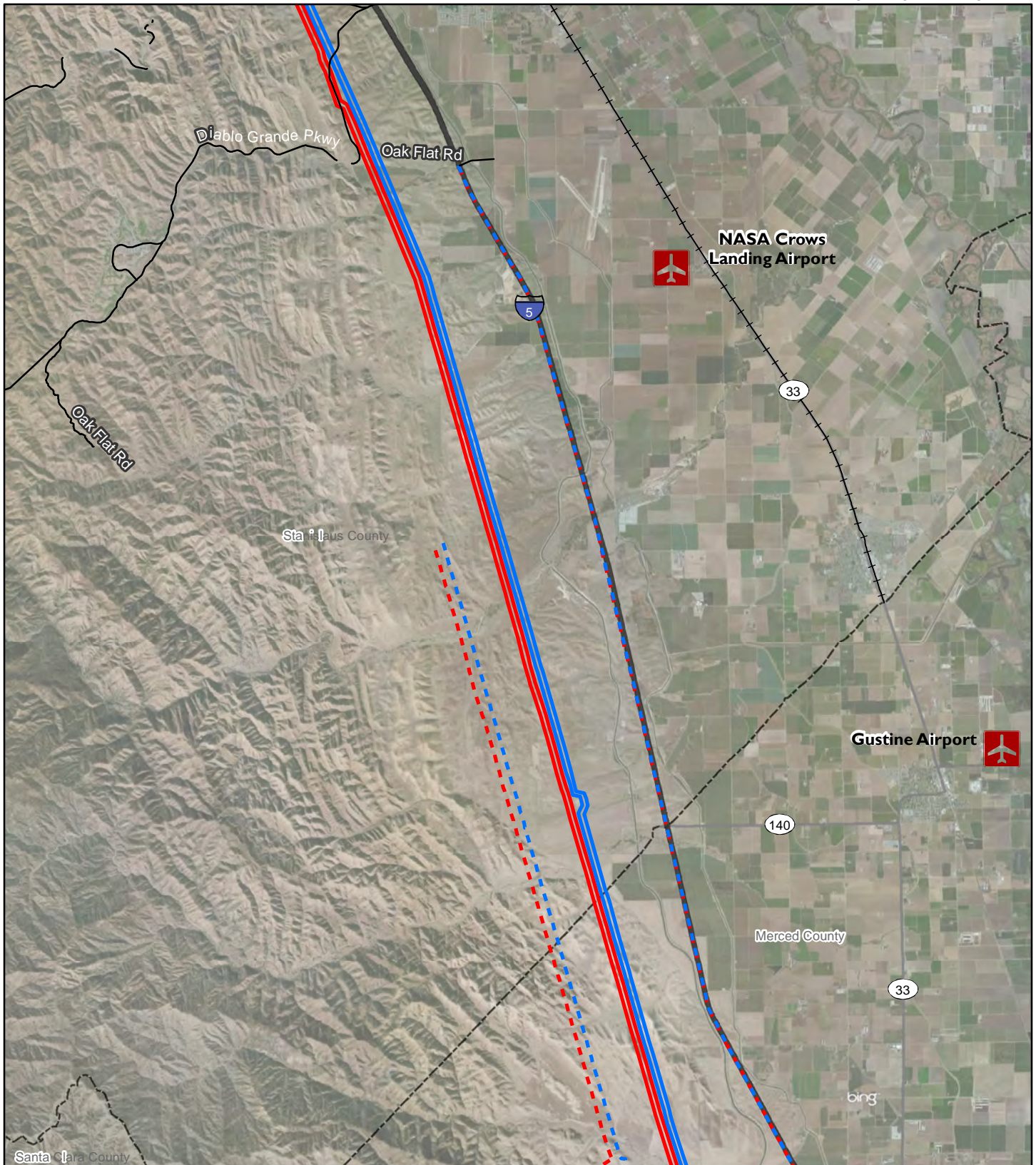
Source: WAPA SNR, Aspen EG, California High Speed Rail Authority

- Substations
- ▬ Proposed Project Corridor
- ▬ Corridor Alternatives
- ▬ Proposed Project Study Area
- ▬ Alternatives Study Area
- + + Union Pacific Railroad
- ▬ Major Highways
- ▬ Major Roads
- ▬ California High Speed Rail Alignment
- ✈ Airport

Figure 3.14-1b
Regional
Transportation
Network

0 1.5 3 Miles





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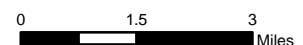
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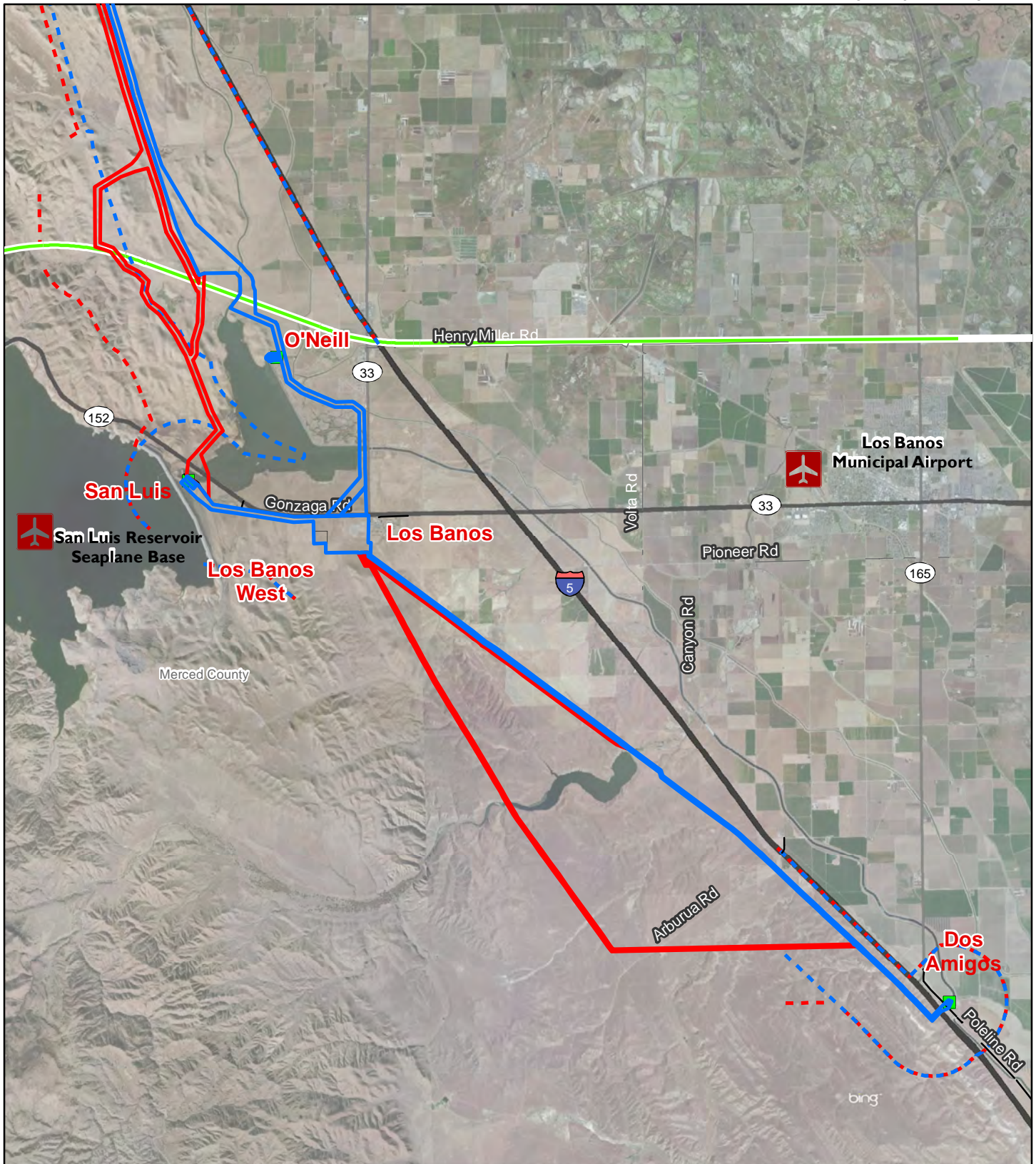
Source: WAPA SNR, Aspen EG, California High Speed Rail Authority

- Substations
- Proposed Project Corridor
- Corridor Alternatives
- Proposed Project Study Area
- Alternatives Study Area

- + + Union Pacific Railroad
- Major Highways
- Major Roads
- California High Speed Rail Alignment
- ✈ Airport

Figure 3.14-1c
Regional
Transportation
Network





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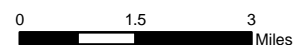
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- Substations
- Proposed New Substations
- ▬ Proposed Project Corridor
- ▬ Corridor Alternatives
- ▬ Proposed Project Study Area
- ▬ Alternatives Study Area
- ▬ Union Pacific Railroad
- ▬ Major Highways
- ▬ Major Roads
- ▬ California High Speed Rail Alignment
- ✈ Airport

Figure 3.14-1d
Regional
Transportation
Network



No state or interstate highways in Alameda County would be affected by the Proposed Project corridor. The state and interstate highways in the other three counties are administered by Caltrans Region 10. Region 10 has designated several segments of I-5 in the study area as deficient, including portions in the northern part of Stanislaus and Merced Counties, and has predicted that future LOS for all but one rural segment will exceed the concept LOS by 2030. Portions of I-580 are currently deficient, and all portions are predicted to get worse without improvements. However, planned improvements are predicted to improve or at least stabilize present LOS levels in 2035 (SJCOG, 2011b).

Existing LOS data for SR 152 and SR 33 near the study area are not available. According to the Route 152 Trade Corridor Study Summary Report, SR 152 east of Gilroy and on the eastbound ascent to Pacheco Pass is nearing capacity and will exceed capacity by 2015 (VTA, 2010). The Merced County Association of Governments forecasts in its 2011 Regional Transportation Plan that by 2035, both SR 152 and SR 33 in the study area vicinity will operate at LOS F (MCAG, 2011).

Existing Rail Conditions

Near Patterson Pass Road, the Union Pacific tracks handle 8 to 10 freight trains per day and accommodates the Altamont Corridor Express (ACE), which currently runs eight commuter trains per day (four each way) between Tracy and Livermore through Altamont Pass. An additional rail corridor in this area is under consideration by the San Joaquin Regional Rail Commission, which owns and manages the ACE, for construction of a high-speed rail spur to connect the San Francisco Bay Area with the Central Valley high speed rail line. Another high speed rail spur corridor is under consideration through Pacheco Pass, passing through the study area just to the north of O'Neill Forebay. See Figures 3.14-1a through 3.14-1d for the alignment of the high speed rail spurs.

Air Transportation Conditions

There are several active airports in the Proposed Project vicinity. The Byron Airport is a general aviation airport owned by Contra Costa County located approximately 3 miles northwest of the Tracy Substation and 3 miles south of the Town of Byron. It is located on a 1,307-acre plot, 814 acres of which are currently under a conservation easement for the preservation and enhancement of the San Joaquin kit fox. It offers two runways, one 4,500 feet long and the other 3,000 feet, and is a popular base for skydivers, gliders and other recreational flight activities. Approximately 116 aircraft are based at the airport, which averaged 164 flights per day in 2013.

The Tracy Municipal Airport is located on 310 acres approximately 2.5 miles from the Proposed Project area near the intersection of I-580 and Corral Hollow Road. The airport operates two runways for private aircraft, including single and twin-engine propeller driven airplanes, business jets, crop dusters, helicopters, ultra-light aircraft, and hot air balloons. The facility does not allow pesticide loading on crop dusters at the airport, and does not store jet fuel for refueling jet aircraft. The City of Tracy produced an airport management plan and EIR in 1998 for a planned expansion. At that time the airport consistently had more than 50,000 operations per year, averaging approximately 140 operations per day in the 1990s. About 110 aircraft were based at the airport at that time, with 200 predicted by 2016. The New Jerusalem Airport, also owned by the City of Tracy, is a single 3,500-foot runway on a 394-acre site approximately 6.5 miles northeast of the closest location of the Proposed Project, near the intersection of South Kasson Road and Durham Ferry Road. It is used for transient aircraft operations and averaged 77 flights per week in 2013.

The City of Gustine operates a single runway airport on a 45-acre site next to Highway 140 about 1.5 miles east of the City, approximately 8 miles from the Proposed Project corridor. The City owns 15 hangers, and an additional four hangers are privately owned. It can handle turbo-prop and small jet aircraft, though

only during daylight hours, and jet fuel is not offered for sale. It averages approximately 22 operations per day, with 19 aircraft based at the field (airnav.com, 2014b).

The Los Banos Municipal Airport operates a single runway on a 101-acre site on the west side of the City of Los Banos for general aviation, including small jets. The airport is open to the general public and offers jet fuel for refueling, but does not allow pesticide handling for crop dusters. It averages 44 operations per day, with 17 planes based on-site (airnav.com, 2014a). The closest point from the airport to the Proposed Project is approximately 5.8 miles to the southwest, near the Los Banos Creek Reservoir.

Also in the Project vicinity are several small private airfields, including crop dusting operations near Westley that is 3 miles from the Proposed Project and there is another airfield near the intersection of I-5 and I-205 that is approximately 8 miles from the Proposed Project. In addition, there are fields supporting an aircraft museum near Firebaugh, about 8 miles southeast of the Dos Amigos Substation. Seaplane operations are also allowed on San Luis Reservoir, though overnight moorage is not allowed and all landings must be at least 500 feet from shore; only 25 landings on the reservoir were recorded in 2013 (airnav.com, 2014a).

There is also an inactive airport about 3 miles from the Proposed Project corridor at its closest point near the community of Crows Landing that was used for training by the Navy in WWII, and by other branches of the military in the 1970s and 1980s. The National Aeronautics and Space Administration (NASA) Ames Research Center, located at Moffett Field, took over operation of the facility in 1994 and ceased operations in 1997. Stanislaus County has pursued potential development of an industrial park at the airport, and re-opening the airport for private aircraft, leading to development of the Crows Landing Airport Land Use Compatibility Plan in June 2013. The County has not yet produced an airport master plan for the facility, and no construction has occurred at the abandoned field since NASA transferred ownership of the facility to the County in 2004. Another closed airport, formerly used for crop duster operations, is located near the City of Patterson.

Bicycle Lanes

Because it is a low-volume road with four-foot-wide shoulders, West Patterson Pass Road in Alameda and San Joaquin Counties within the Proposed Project study area are currently designated as Class III bikeways. Class III bikeways are those with shared use of lanes with pedestrian or motor vehicle traffic, typically at the right edge of the traveled way without a bike lane stripe. The shoulder of the road in both directions is marked off with a white stripe, but otherwise has no signage or other way to indicate it is an official bikeway. This bikeway is on San Joaquin County's South East Livermore Bicycle Improvement Project List, with an estimate of \$2.9 million in improvements planned for a 5-mile section of the road that includes the crossing of the Proposed Project route. Patterson Pass Road is used yearly for an organized bicycle race held in August.

The California Aqueduct at one time was open to bicyclers for its entire length, and there are conflicting reports on whether it is still open. The California Department of Parks and Recreation reports on its web site that the entire 70-mile length of the aqueduct is open to bicyclists (CDPR, 2014). However, while not prohibiting bicycles on the aqueduct maintenance roads, the Department of Water Resources has stated that such use is not encouraged for safety and security reasons.

No existing bikeways are in the Proposed Project study area in Stanislaus County, but the Stanislaus Council of Governments has identified Del Puerto Canyon Road as a Proposed Class II Bikeway in its 2013 Non-Motorized Transportation Master Plan (SCOG, 2013). There are no existing or proposed bikeways in the study area within Merced County.

3.14.1.2 Regulations, Plans, and Standards

There are no specific regulations, plans or standards directly related to the effect of the Project on Traffic and Transportation. Caltrans requires a permit for electric transmission lines that cross any Caltrans right-of-way, and specifies setbacks and height requirements for the support towers and conductors. Support structures are not allowed within the right-of-way of state and interstate highways, but lines are allowed to cross over (supported by towers) outside the Caltrans right-of-way. Local jurisdictions also require permits for utility crossing of roads, and have similar setback requirements.

Each of the four counties affected by the Project have organizations that plan improvements to the local transportation network, including roads, railways, bikeways and pedestrian paths. Each produces a long-range Regional Transportation Plan (RTP) that establishes the county's transportation goals, objectives, and policies; identifies appropriate transportation projects; and describes funding strategies and options. The RTPs in the Project Area are:

- Merced County Association of Governments Regional Transportation Plan
- San Joaquin Council of Governments 2014-2040 Regional Transportation Plan and Sustainable Communities Strategy
- Stanislaus Council of Governments 2011 Regional Transportation Plan
- Alameda County Wide Transportation Plan 2012

3.14.2 Corridor Alternatives

3.14.2.1 Patterson Pass Road Alternative

This corridor parallels the Proposed Project between Patterson Pass Road and Butts Road in San Joaquin, Stanislaus and Merced Counties. The local and regional roadway conditions for this alternative are described for the Proposed Project above for this segment.

3.14.2.2 Butts Road Alternative

This alternative corridor splits off from the Proposed Project corridor at McCabe Road, very near where a high speed rail line is under study, and travels on the west side of O'Neill Forebay. This alternative crosses no roads between McCabe Road and the intersection with the West of Cemetery Alternative corridor, though a private agricultural access road is inside the corridor for approximately 1 mile. From there this corridor would cross several roads used to access the recreation facilities on the west side of O'Neill Forebay, SR 152, and then interconnect with the Los Banos and San Luis Substations.

3.14.2.3 West of Cemetery Alternative

The West of Cemetery alternative corridor splits at Butts Road, going around the cemetery to the west, crossing and then paralleling McCabe Road and Horseshoe Road, and the planned high speed rail route. From there this corridor would cross several roads used to access the recreation facilities on the west side of O'Neill Forebay, SR 152, and then interconnect with the Los Banos and San Luis Substations.

3.14.2.4 West of O'Neill Forebay 70-kV Alternative

This alternative would cross access roads to facilities within the State Recreation Area, local farm and ranch access roads, McCabe Road, and possibly access roads to the facilities near the O'Neill Substation.

3.14.2.5 San Luis to Dos Amigos Alternative

This corridor is adjacent to a segment of the Proposed Project between the San Luis Substation and Los Banos Creek Reservoir in Merced County. It would have similar local and regional roadway conditions as that described above for the Proposed Project for this segment.

3.14.2.6 Billy Wright Road Alternative

This alternative corridor crosses Billy Wright Road approximately 3 miles south of Los Banos Substation. The corridor then crosses Arburua Road approximately 2.8 miles west of Highway 5 and the Proposed Project corridor. This alternative corridor would travel on the west side of Los Banos Creek Reservoir, largely through an unpopulated region accessed by foot, horse or off-highway vehicles. Trails are used primarily for ranch access and are generally closed to the public.

3.15 Visual Resources

The study area for visual resources is defined in Section 3.1 and also includes areas from which the study area would be visible.

The analysis of visual resources uses the following terms:

- **Key Observation Point (KOP):** One or a series of points on a transportation corridor or at a public/private use area, where the view of a proposed activity would be most revealing or sensitive.
- **Viewshed:** The landscape that can be directly seen under favorable atmospheric conditions, from a KOP or along a transportation corridor.
 - Foreground View: 0–1 mile.
 - Middleground View: 1–3 miles.
 - Background View: 3–5 miles.
- **Visual Quality:** The relative worth of the overall impression or appeal of an area created by the physical features of the landscape, such as natural features (landforms, vegetation, water, color, adjacent scenery and scarcity), and built features (roads, buildings, railroads, agricultural patterns, and utility lines). These features create the distinguishable form, line, color, and texture of the landscape composition that can be judged for scenic quality using criteria such as contrast.

Within this analysis, visual quality at KOPs and viewsheds are discussed and qualitatively rated as follows:

- High: Where the valued natural landscape character is intact with only minute, if any, visual deviations. The existing natural landscape character is expressed at the highest possible level.
 - Moderate: Where the valued natural landscape character appears slightly altered. Noticeable deviations must remain visually subordinate to the natural landscape character being viewed.
 - Low: Where the valued natural landscape character appears moderately to heavily altered. Visual deviations (human-made structures) primarily dominate the valued landscape character being viewed with their attributes such as size, shape, color, edge effect, and pattern having overwhelmed the natural landscape being viewed.
- **Visual Sensitivity:** the concern by viewers toward change to visual quality. Visual sensitivity is generally higher in natural or unmodified landscapes than those with structures of high architectural value.
 - **Visual Contrast:** Opposition or unlikeness of different forms, lines, colors, or textures in a landscape. Generally, increased visual contrast within foreground distances would be more noticeable to viewers than increased visual contrast within middle-ground and background view distances.

3.15.1 Proposed Project

3.15.1.1 Affected Environment

This section identifies the level of visual quality and sensitivity of valued views in the region surrounding the Proposed Project corridor. Visual quality is generally defined as the degree of contrast and variety within a landscape. Assessment of visual quality includes analysis of contrast, colors, textures and composition of the view, and is generally an estimate of the degree to which humans enjoy an existing view. Pleasant landscapes generally have high visual quality. Natural landscapes of high visual quality may contain distinctive landforms, vegetation patterns, and/or water forms, whereas high visual quality

views with human-made elements generally consist of structures of high architectural value, such as the Golden Gate Bridge or the Transamerica Pyramid. Visual sensitivity is the concern by viewers toward change to visual quality. Visual sensitivity is generally higher in natural or unmodified landscapes than those with structures of high architectural value.

The Proposed Project could obstruct or modify present views in the landscape. The importance of viewpoints, the places from which people value the aesthetics of a landscape, is related to the visual quality of the view, the number of people who regularly experience and appreciate the view, and whether the experience is short- or long-term. Views from residences and recreation areas, for example, are often considered more important than views from a moving car, since the latter is a short-term experience. Similarly, recreation areas and established scenic overlooks are generally considered more important viewpoints than places with similar quality but more limited access, and therefore fewer viewers.

Approximately half of the Proposed Project area is located on private lands in remote areas of the Diablo Range. These areas are not accessible by the general public; therefore, very few people would see the Proposed Project structures in these areas. However, a large portion of the Project area is viewable from residences, recreation areas and local roads and highways. This includes:

- residents and travelers in the area from the Tracy Substation to the crossing over I-580;
- travelers along a 10-mile segment of I-5 starting at the border of San Joaquin/Stanislaus County border extending south;
- residents, travelers, and visitors in the area surrounding the San Luis Reservoir, O'Neill Forebay and Los Banos Creek Reservoir; and
- travelers along a 5-mile segment of I-5 in Merced County.

Views from these places towards the Diablo Range generally are open, scenic vistas of undeveloped land with several waterways and waterbodies, though manmade structures such as windmills and transmission line towers can be seen from some viewpoints as well. The Diablo Range is a distinctive landform in itself, though it is similar to the hills in many other areas of the state, and therefore is not rare. Views to the east from I-5 often include the California Aqueduct, Delta Mendota Canal, and green farmlands beyond.

Visual quality of accessible views throughout the Proposed Project study area is moderate to very high, as shown in Table 3.15-1. Visual sensitivity is moderate in agricultural areas, such as near the Tracy Substation, in areas where manmade structures are visible, such as along I-580 from I-205 to the crossing of the Union Pacific Railroad (UPRR) tracks at Hanson Road, and in the areas surrounding the substations. Otherwise, visual quality in the study area is high to very high, especially towards the open areas to the west, which offer expansive views of the Diablo Range, with interesting landscapes in the foreground, middleground and background, and a variety in textures, colors and features. Evidence supporting this assessment includes the official designation as scenic highways of I-5 from SR 152 to I-580, and all of I-580 within San Joaquin County. This is also true for SR 152 from I-5 to the Santa Clara County line. Figure 3.15-1 illustrates the Scenic Highway segments in the study area. Viewer sensitivity along these highway segments is moderate to high, depending on the viewpoint and the ability to access longer-term viewpoints along the way.

Table 3.15-1. Visual Quality and Sensitivity of the Proposed Project

Segment	Location	Quality	Sensitivity
North	Tracy Substation to Patterson Pass Road	Moderate due to disturbed agricultural fields, wind farms, transmission line structures, substation, pumping plant, highways and canals.	Moderate to High due to presence of many residences and a college campus.
Central	Patterson Pass Road to Butts Road	High due to natural landscape of the Diablo Range, marked by rolling hills with steep canyons	Moderate on private lands with no public access, high on portions visible from I-5
San Luis	San Luis Reservoir State Recreation Area	High due to natural landscapes in the background with San Luis Reservoir and O'Neill Forebay in the foreground	High to Very High in the recreation areas around O'Neill Forebay, moderate near the three substations in the area
South	Los Banos to Dos Amigos Substation	High due to natural landscape of the Diablo Range, marked by rolling hills with steep canyons	Moderate on private lands with no public access, High on portions visible from I-5, and from recreation areas at Los Banos Creek Reservoir

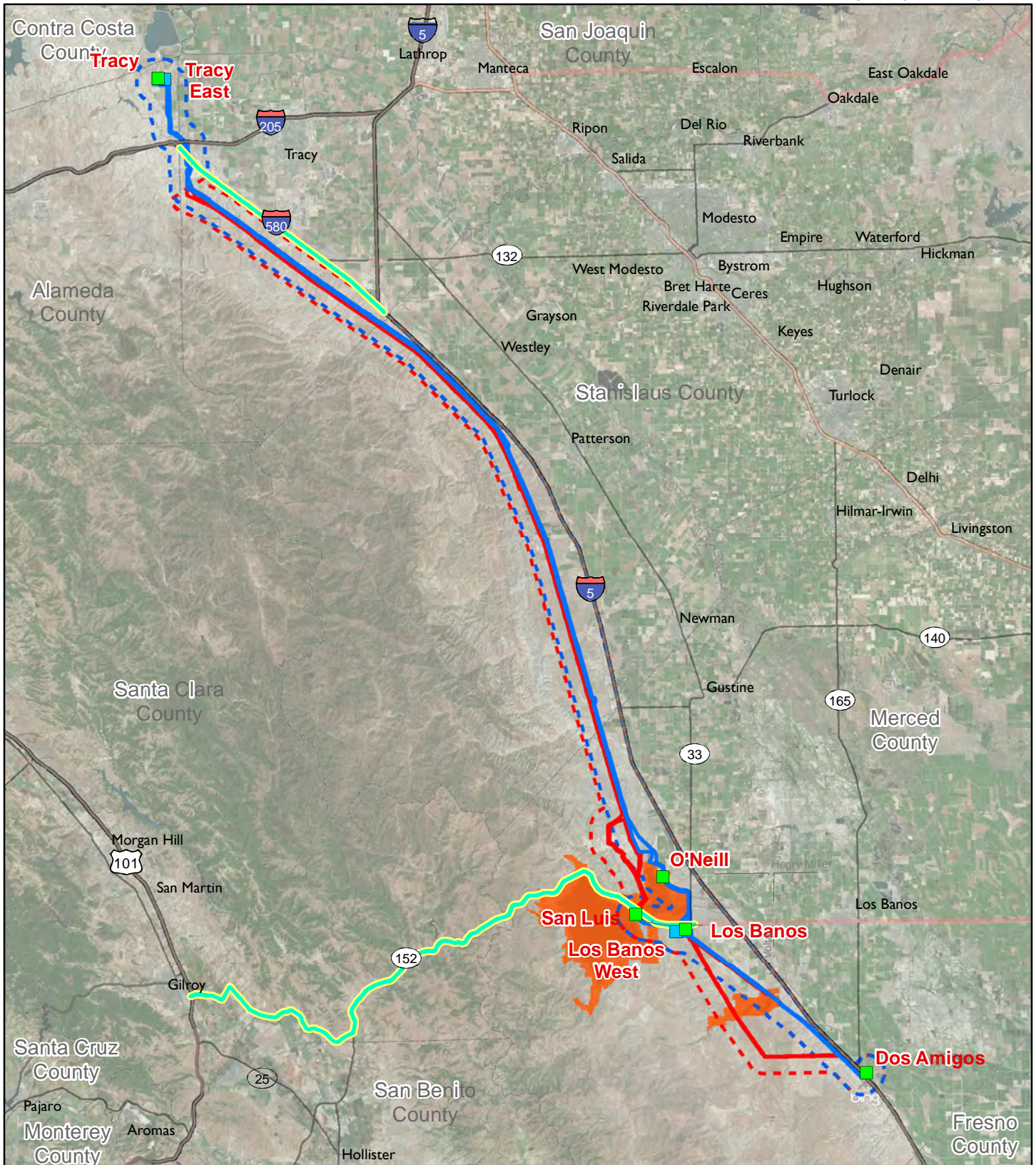
Areas farther away from the highways have similar aesthetics as the hills seen from the scenic highway segments. They would also be characterized as high to very high visual quality, with the exception of the few areas with views of past or present mining operations, or views of man-made structures such as the existing transmission lines, which have poor to moderate view quality. These areas are not generally accessible and have very few visitors beyond the landowners and their employees and guests. Roadless areas generally have reduced viewer sensitivity than other areas of the same quality because of the lack of access. Exceptions to this are places that are difficult to access but are highly valued for their scenic and other values.

The portions of the San Luis Reservoir State Recreation Area within the Los Banos Creek canyon upstream from Los Banos Creek Reservoir, for example, offer valued experiences for visitors. They are valued because of the scenic resources of the canyon and the historical significance as part of the "Path of the Padres" used by Spanish priests and others for traveling between mission San Juan Bautista and the Central Valley. The recreation area organizes a very popular Path of the Padres Hike on several weekends every spring. The sell-out experience includes a 5-mile boat-ride and another 5-mile hike along the creek. Because access without a boat means a 10-mile hike, few people experience the canyon through much of the year; yet because of its historical and scenic values, viewer sensitivity is very high.

The other units of the San Luis Reservoir Recreation Area also have very high viewer sensitivity and very high visual quality in the area because of the views across the three waterbodies in the area to the landscapes beyond.

3.15.1.2 Regulations, Plans, and Standards

Regulations, plans, and standards for visual resources would be reflected in the goals, objectives, policies, and implementation strategies of state and local adopted plans. Caltrans' Scenic Highway program is authorized by State Streets and Highway Code (Sections 260 through 263) to establish special conservation treatment to protect and enhance the natural scenic beauty of California highways and adjacent corridors. Any city or county may propose adding routes with outstanding scenic elements to the list of eligible state highways, but additions are made through legislative action. Once designated, the city or county also must adopt a Corridor Protection Program consisting of ordinances, zoning, and/or planning policies to preserve the scenic quality of the corridor, or document such regulations that already exist in various portions of local codes.



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- Substation
- Proposed New Substations
- Proposed Project Corridor
- Corridor Alternatives
- Proposed Project Study Area
- Alternatives Study Area
- Scenic Highway Segments
- San Luis Reservoir State Recreation Area

Figure 3.15-1

Scenic Resources



0 5 10 Miles

The local jurisdictions responsible for planning in the study area include Alameda, San Joaquin, Stanislaus, and Merced Counties. The consistency of the Project with the adopted plans and policies of these jurisdictions is discussed in Section 3.8 (Land Use). Alameda County's East County Specific Plan includes a goal of preserving unique visual resources and protecting sensitive viewsheds, and a policy (Policy 120) stating that the County "shall require that utility lines be placed underground whenever feasible. When located above ground, utility lines and supporting structures shall be sited to minimize their visual impact."

San Joaquin County's General Plan lists transmission line development as a "concern" due to the potential visual or aesthetics effects related to the "appearance of areas with transmission lines." In the Infrastructure Element the County lists a primary objective of protecting "the scenic value of the County landscape from inappropriately located overhead utility lines."

The primary goal stated in the Stanislaus County General Plan Conservation/Open Space Element is to "Encourage the protection and preservation of natural and scenic areas throughout the County." One of the stated purposes of the element is to preserve "open space lands for outdoor recreation including scenic, historic and cultural areas."

Merced County's General Plan has a Scenic Resources element with a goal of protecting scenic resources and vistas through preservation of agricultural land, ranch land, and other open space areas. It also includes a policy (NR-4.2) to "Coordinate with Caltrans, during the review of proposed structures and activities located adjacent to State-designated scenic highways, to ensure that scenic vistas and local scenic values are not significantly degraded."

3.15.2 Corridor Alternatives

3.15.2.1 Patterson Pass Road Alternative

This alternative corridor would parallel the Proposed Project on the west side of the existing transmission circuits, rather than on the east side. Visual quality is high for this alternative because of its location on private grazing lands in the Diablo Range, marked by rolling hills and steep canyons. Visual sensitivity is low for much of the corridor because it is not accessible by the general public. Visual sensitivity is high from the portions of this segment visible from I-5.

3.15.2.2 Butts Road Alternative

This alternative corridor study area would be between Butts Road and the Los Banos Substation. Visual quality in this area is moderate because the terrain is relatively flat and is dominated by the existing transmission circuit towers that the route would parallel. However, the rolling hills of the Diablo Range can be seen in the background from many viewpoints. Visual sensitivity is high from the recreation facilities around O'Neill Forebay, but is lower from the roads in the region due to the dominating presence of the existing transmission lines.

3.15.2.3 West of Cemetery Alternative

This alternative corridor study area is on the west side of the San Joaquin Valley National Cemetery from Butts Road to the Los Banos Substation. There are no existing structures on the western side of the San Joaquin Valley National Cemetery. Therefore, visual quality is very high for this alternative due to its location in the rolling hills of the Diablo Range, the lack of any artificial structures in most of the viewshed, and the relatively high architectural value of the landscaping and buildings at the cemetery. The study area south of the San Joaquin Valley National Cemetery would be moderate because the

terrain is relatively flat and is dominated by the existing transmission circuit towers that the corridor would parallel near the Los Banos and San Luis Substations.

3.15.2.4 West of O'Neill Forebay 70-kV Alternative

This alternative travels in the same corridor as the Butts Road Alternative corridor from the San Luis Substation to McCabe Road, and then travels in the Proposed Project corridor from McCabe Road to the O'Neill Substation. Visual quality is moderate in those areas dominated by existing transmission lines, and high for the recreation facilities near O'Neill Forebay.

3.15.2.5 San Luis to Dos Amigos Alternative

This alternative corridor is adjacent to the Proposed Project, on the west side of the existing transmission lines rather than on the east. Visual quality is similar to the Proposed Project (refer to Table 3.15-1). Though the new line would be farther from viewers driving along I-5, the new line in combination with the existing line would look very nearly identical from the highway. Visual sensitivity is similar to that of the Proposed Project (refer to Table 3.15-1).

3.15.2.6 Billy Wright Road Alternative

This alternative lies to the west of the Proposed Project south of the Los Banos Substation. This alternative would travel over the west end of the Los Banos Creek Reservoir, near the trailhead of the Path of the Padres hiking trail that heads westward upstream of the reservoir. Visual quality is moderate to high due to the presence of existing transmission lines in the region, contrasted against the rolling hills and steep ravines of the Diablo Range. Visual sensitivity is moderate for most of this alternative due to the lack of public access to private grazing lands, though sensitivity is high to very high along the Path of the Padres trail.

3.16 Water Resources and Floodplains

3.16.1 Proposed Project

This section describes the existing hydrology and water resources that could be affected by the Proposed Project. The study area for this analysis is defined in Section 3.1 and includes all surface and groundwater resources, with the exception of wetlands, which are addressed in Section 3.4, Biological Resources. Additionally, due to the potential for downstream or down-gradient transport of pollutants, sensitive downstream receiving waters outside of the study area are included in this analysis.

3.16.1.1 Affected Environment

Baseline data was collected from several sources, including: ESRI, U.S. Geological Survey (USGS), Central Valley Regional Water Quality Control Board (CVRWQCB), State Water Resources Control Board (SWRCB), DWR, Federal Emergency Management Agency (FEMA), U.S. Army Corps of Engineers (USACE), and Western.

Water Resources Overview

The Proposed Project runs generally from north to south on private land along the foothills of the Diablo Range section of the Coast Range Mountains to the west of the San Joaquin Valley, roughly parallel to I-5 and the California Aqueduct. Notable areas of public land include the San Luis Reservoir State Recreation Area and the land surrounding the Los Banos Creek Reservoir. The study area begins roughly 6 miles northwest of the City of Tracy and ends roughly 8 miles south of the City of Los Banos. The study area is located within the San Joaquin River Hydrologic Region (HR), one of ten hydrologic regions in California established by the DWR for management purposes. The Proposed Project is subject to the objectives and limits of the Basin Plan for the Sacramento River and San Joaquin River Basins, under the jurisdiction of the CVRWQCB (USGS, 2014; USACE, 2008).

Climate in the region is temperate, with mild winters and hot, dry summers. Average temperatures near the City of Patterson (located roughly at the mid-point of the study area) include winter lows in the mid-30 degrees Fahrenheit to summer highs in the mid-90 degrees Fahrenheit. Rainfall is greatest during the months of November through March, with an average annual precipitation total of 11.45 inches (city-data.com, 2014; idcide.com, 2014; USACE, 2008).

Hydrologic Regions

Hydrologic regions are divided into watersheds, which are areas of land within which all water drains to one point. The National Hydrography Dataset (NHD) defines nested hydrologic units, beginning with Regions that are subdivided into subregions, basins, subbasins and watersheds. The study area is underlain by the San Joaquin Subregion. Within that Subregion, the study area traverses three Subbasins: the San Joaquin Delta, the Lower San Joaquin River, and the Middle San Joaquin–Lower Cowchilla. Within these Subbasins, the study area intersects 13 Watersheds, including: Corral Hollow Creek, Crow Creek–San Joaquin River, Del Puerto Creek, Ingram Creek–San Joaquin River, Lone Tree Creek–San Joaquin River, Lower Los Banos Creek, Mud Slough, Mud Slough–San Joaquin River, Old River, Orestimba Creek, Salado Creek–San Joaquin River, San Luis Creek, and Upper Los Banos Creek. Figure 3.16-1 shows the NHD-defined hydrologic units traversed by the study area.

Numerous small, unnamed streams flow down from the Diablo Range, across the study area, and towards the San Joaquin River and valley floor. Named streams that cross or run immediately downstream of the

study area include: Arkansas Creek, Corral Hollow Creek, Crow Creek, Del Puerto Creek, Garzas Creek, Hospital Creek, Ingram Creek, Little Salado Creek, Lone Tree Creek, Los Banos Creek, Martin Creek, Mountain House Creek, Mustang Creek, Orestimba Creek, Ortigalita Creek, Patterson Run, Quinto Creek, Salado Creek, Salt Creek, and San Luis Creek. In addition to the named streams listed above, named surface water features within the study area include the Delta-Mendota Canal, the Governor Edmund G. Brown California Aqueduct, the Los Banos Creek Reservoir, the O'Neill Forebay, the San Luis Reservoir, and the San Luis Wasteway. With the exception of the canals, most streams that cross the study area are ephemeral and run from the southwest to the northeast as they leave the foothills and terminate in alluvial fans that flow into the San Joaquin Valley. Surface water features within the study area are shown on Figures 3.16-2a through 3.16-2d (USGS, 2014; USACE, 2008).

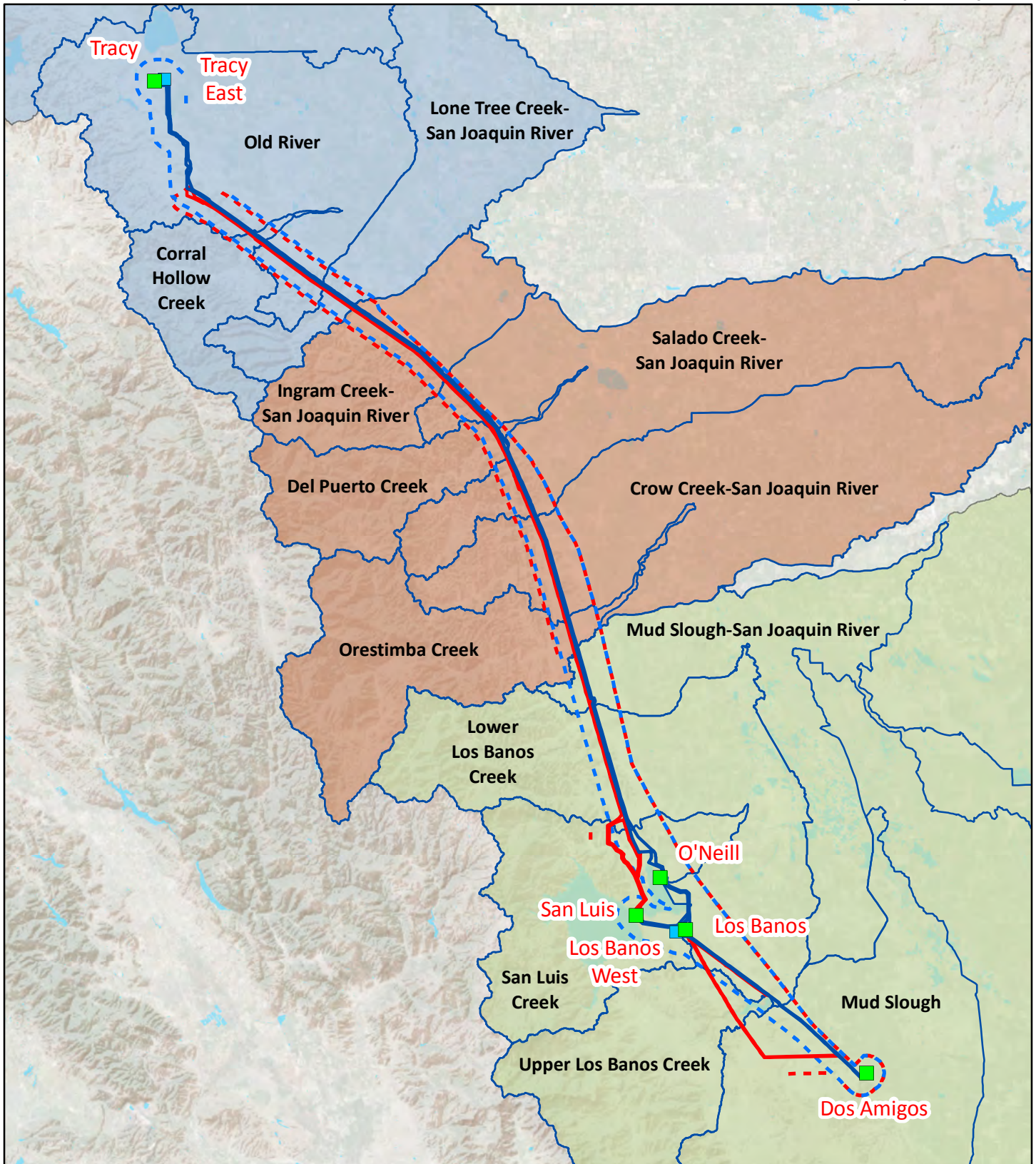
Surface Water Quality

The CVRWQCB defines beneficial uses for all surface and groundwater within the study area. Beneficial uses are protected or enhanced through water quality objectives, which are defined as "...the limits or levels of water quality constituents or characteristics which are established for the reasonable protection of beneficial uses of water or the prevention of nuisance within a specific area." (CVRWQCB, 2011) Table 3.16-1 lists the beneficial uses for surface water within the study area. Each beneficial use is accompanied by a water quality objective as defined in the Basin Plan. In addition to water quality objectives, the Basin Plan defines total maximum daily load (TMDL) requirements to protect water quality from non-point source pollution.

Section 303(d) of the Clean Water Act requires the identification of waterbodies that do not meet, or are not expected to meet, water quality standards. 33 U.S.C. § 1313(d). These impaired waterbodies are prioritized in the 303(d) list and the development of a TMDL is required. No TMDLs have been developed within the study area. However, several waterbodies within the study area do not meet water quality standards and a TMDL is required but not yet complete. These impaired waterbodies include: Delta Waterways (near the northern boundary of the study area), Hospital Creek, Los Banos Creek, Mountain House Creek, O'Neill Forebay, Salado Creek, and San Luis Creek Reservoir (SWRCB, 2010).

Floodplains

The study area for the Proposed Project is almost entirely devoid of flood hazard areas. Detailed studies identify only two very small 100-year floodplains within the study area: a floodplain associated with the Delta-Mendota Canal at the northern boundary of the study area and a floodplain associated with Corral Hollow Creek, approximately 5 miles south of Patterson Pass Road. Additionally, three very small 100-year floodplains (Zone A designated) that are not based on detailed studies lie within the study area: one at the northern boundary, one associated with Del Puerto Creek, and one associated with Orestimba Creek. Extensive 100-year floodplains exist along the valley floor to the north and east of the Proposed Project, but they lie outside of the study area (FEMA, 2014).



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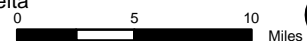
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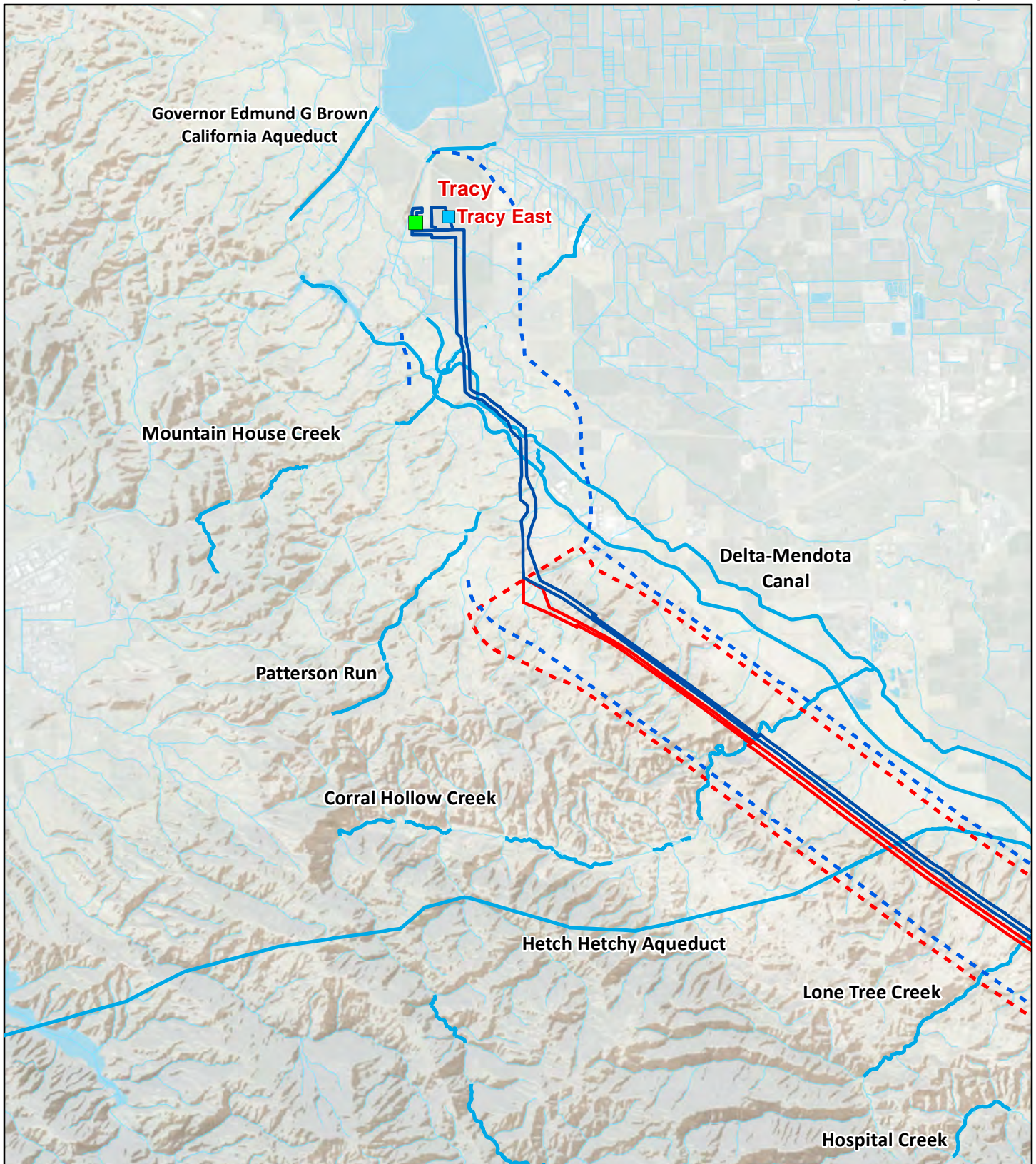
Source: WAPA SNR, Aspen EG, US Geological Survey

- Substation
- Proposed New Substations
- Proposed Project Corridor
- - - Corridor Alternatives
- - - Proposed Project Study Area
- - - Alternatives Study Area

- Watersheds
- Waterbody
- Hydrologic Subbasins
- Lower San Joaquin River
- Middle San Joaquin-Lower Chowchilla
- San Joaquin Delta



**Figure 3.16-1
Hydrologic
Subbasins
and Watersheds**



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Source: WAPA SNR, Aspen EG, US Geological Survey

- Substation
- Proposed New Substations
- Named Stream or Canal
- Unnamed Stream or Canal
- Waterbody

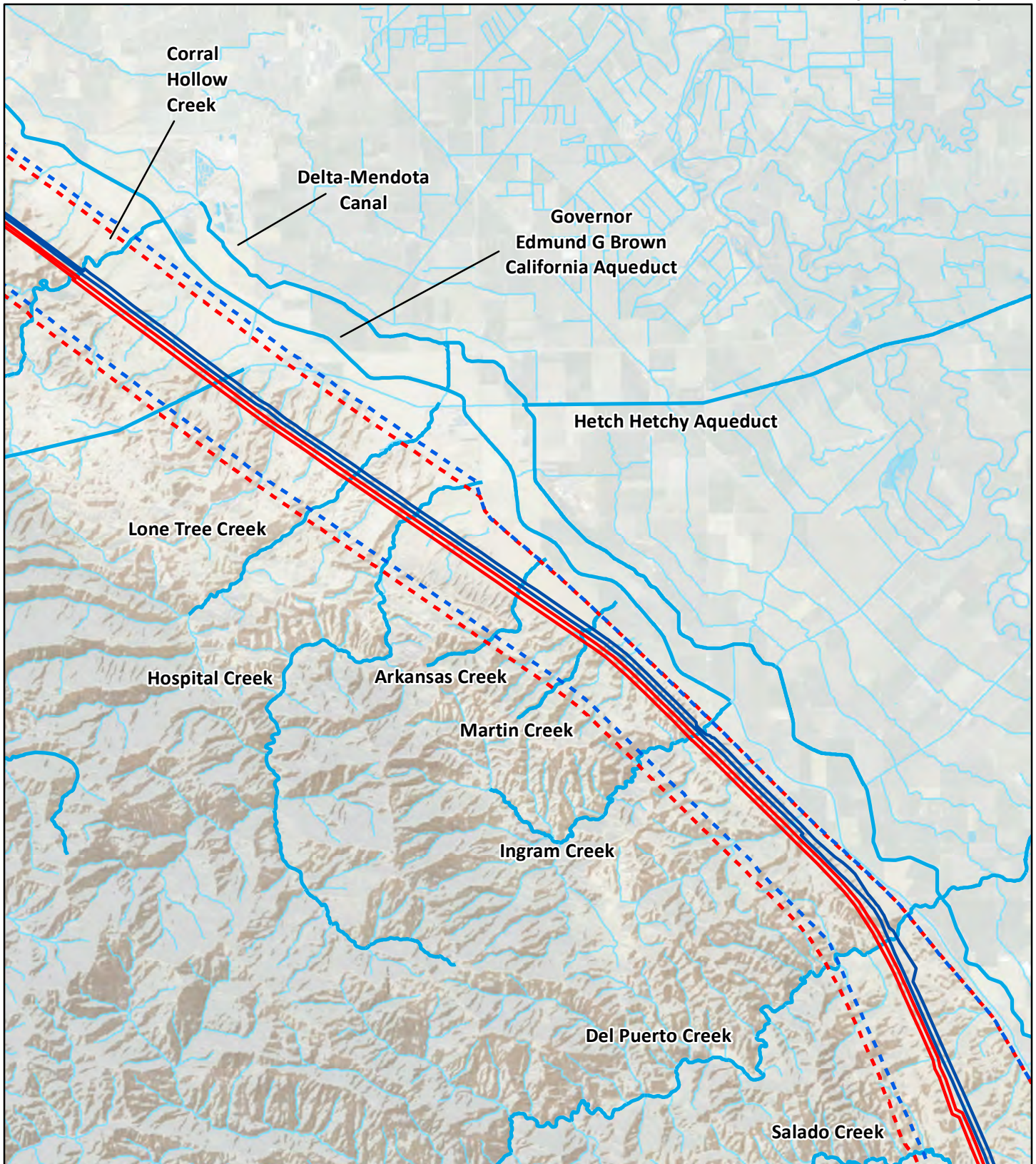
- Proposed Project Corridor
- Corridor Alternatives
- - - Proposed Project Study Area
- - - Alternatives Study Area

Figure 3.16-2a

Waterbodies in the Study Area

0 1.5 3 Miles





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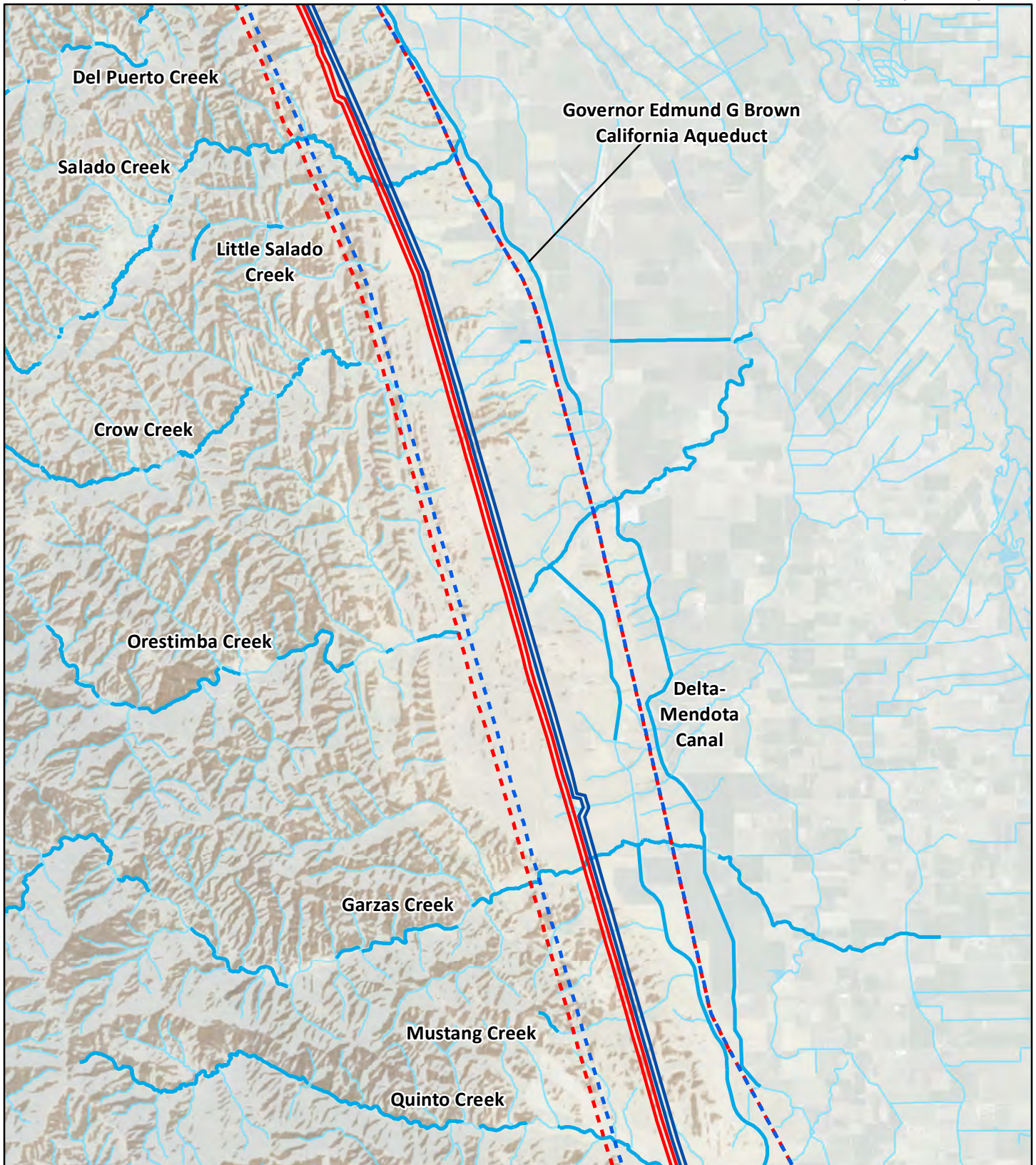
— Named Stream or Canal
— Unnamed Stream or Canal
■ Waterbody

■ Proposed Project Corridor
■ Corridor Alternatives
■ Proposed Project Study Area
■ Alternatives Study Area

Figure 3.16-2b

**Waterbodies in the
Study Area**





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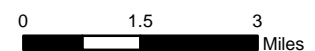
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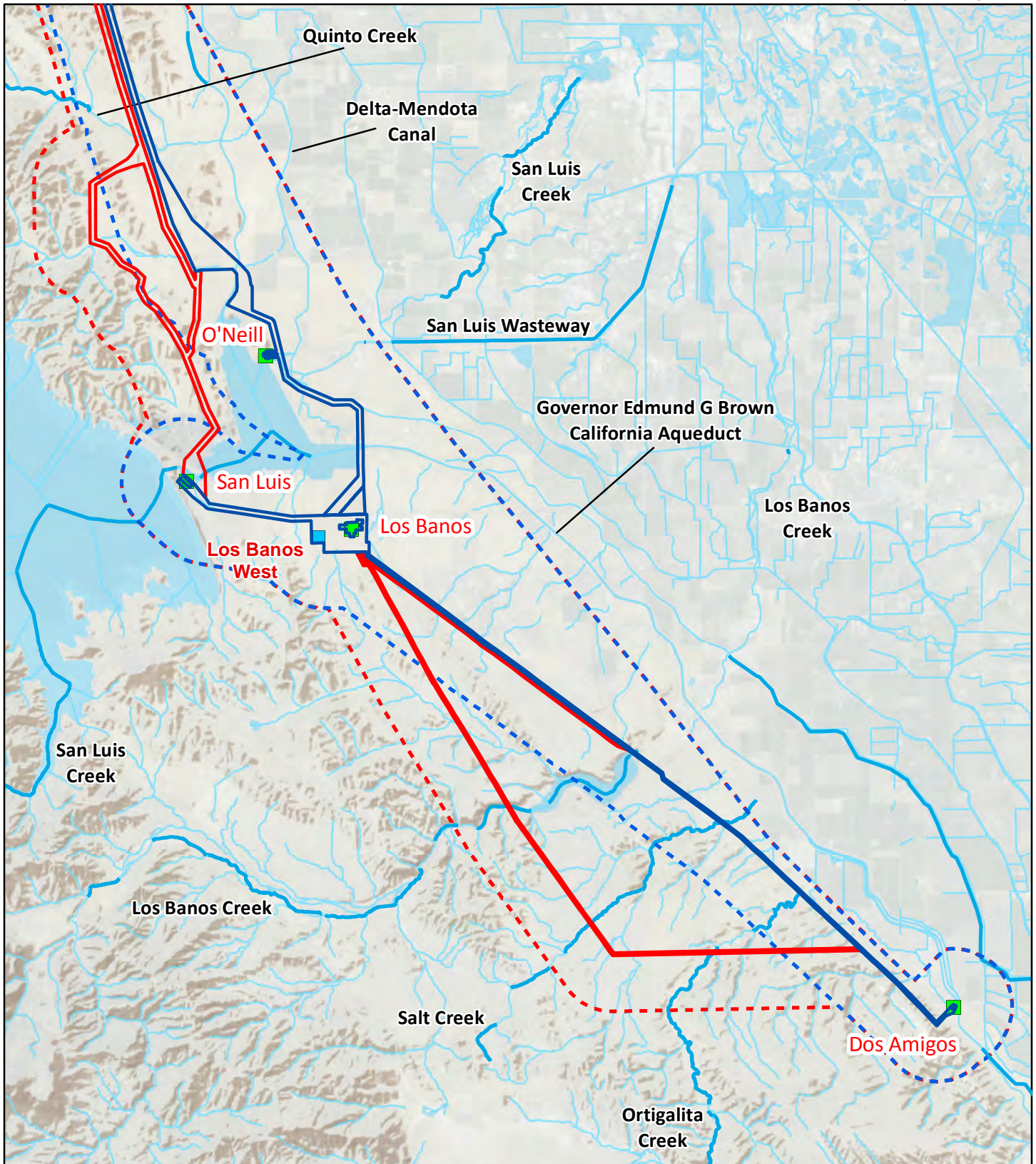
Source: WAPA SNR, Aspen EG, US Geological Survey

- Named Stream or Canal
- Unnamed Stream or Canal
- Waterbody
- Proposed Project Corridor
- Corridor Alternatives
- Proposed Project Study Area
- Alternatives Study Area

Figure 3.16-2c

Waterbodies in the Study Area





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Source: WAPA SNR, Aspen EG, US Geological Survey

- Substation
- Proposed New Substations
- Named Stream or Canal
- Unnamed Stream or Canal
- Waterbody

- Proposed Project Corridor
- Corridor Alternatives
- - - Proposed Project Study Area
- - - Alternatives Study Area

Figure 3.16-2d

Waterbodies in the Study Area

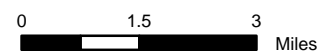


Table 3.16-1. Designated Beneficial Uses for Surface Waters in the Proposed Project Study Area

Waterbody	Beneficial Use*										
	MUN	AGR	PRO	IND	POW	REC-1	REC-2	WARM	COLD	SPWN	WILD
San Luis Reservoir	E	E		E	E	E	E	E			E
O'Neill Reservoir	E	E				E	E	E			
Other Lakes and Reservoirs in San Joaquin River Basin	E				E	E	E	E	E	E	E
California Aqueduct	E	E	E	E	E	E	E				E
Delta-Mendota Canal	E	E				E	E	E			

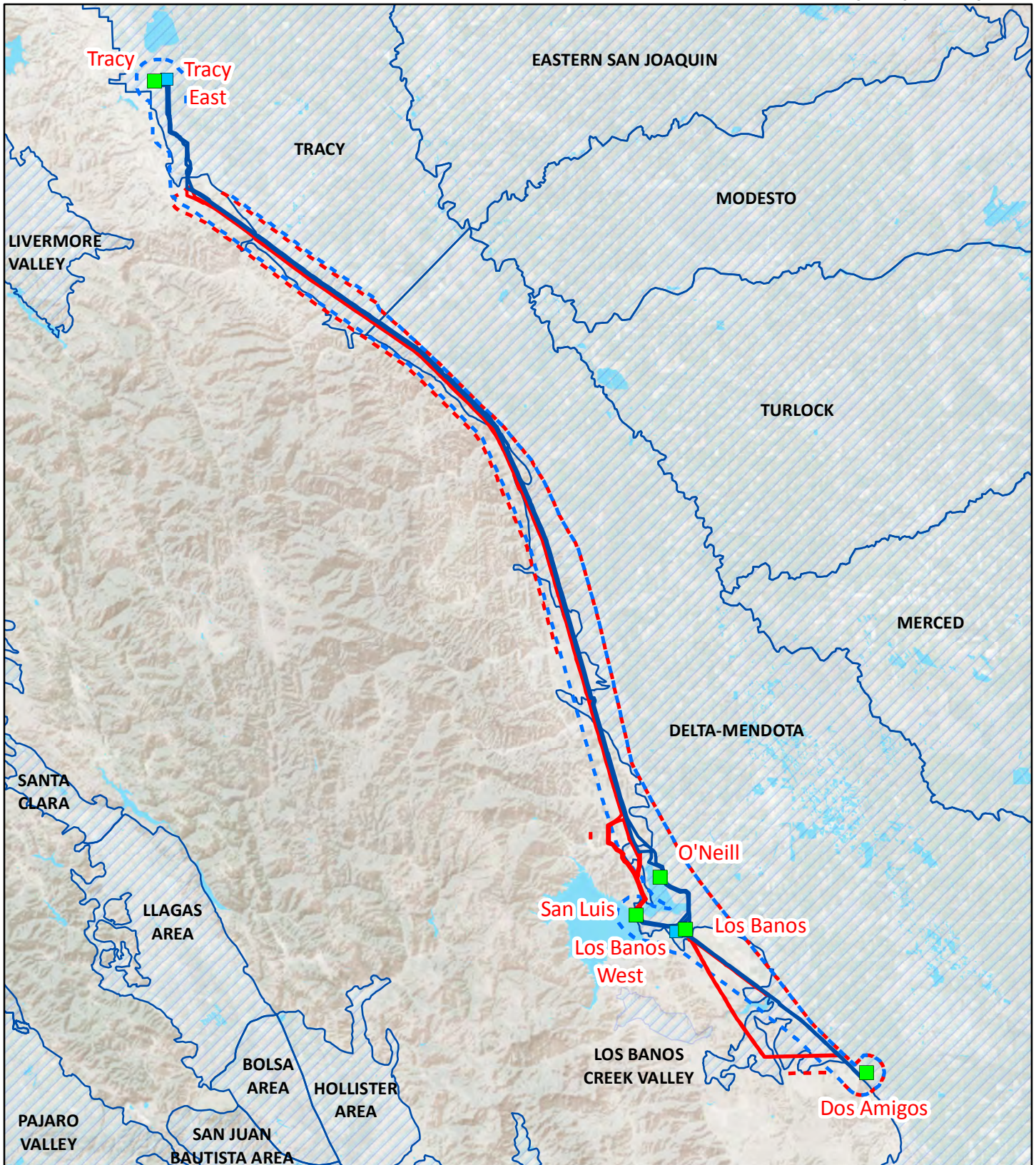
*Key to Symbols:

E	Existing Beneficial Use
MUN	Municipal and Domestic Supply – Uses of water for community, military, or individual water supply systems including, but not limited to, drinking water supply.
AGR	Agricultural Supply – Uses of water for farming, horticulture, or ranching including, but not limited to, irrigation (including leaching of salts), stock watering, or support of vegetation for range grazing.
PRO	Industrial Process Supply – Uses of water for industrial activities that depend primarily on water quality.
IND	Industrial Service Supply – Uses of water for industrial activities that do not depend primarily on water quality including, but not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, or oil well repressurization.
POW	Hydropower Generation – Uses of water for hydropower generation.
REC-1	Water Contact Recreation – Uses of water for recreational activities involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, white water activities, fishing, or use of natural hot springs.
REC-2	Non-contact Water Recreation – Uses of water for recreational activities involving proximity to water but where there is generally no body contact with water, nor any likelihood of ingestion of water. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tidepool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities.
WARM	Warm Freshwater Habitat – Uses of water that support warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.
COLD	Cold Freshwater Habitat – Uses of water that support cold water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.
SPWN	Spawning, Reproduction, and/or Early Development – Uses of water that support high quality aquatic habitats suitable for reproduction and early development of fish.
WILD	Wildlife Habitat – Uses of water that support terrestrial or wetland ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats or wetlands, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.

Groundwater

The study area for the Proposed Project runs along the western border of the very large San Joaquin Valley Groundwater Basin. This basin is subdivided into numerous subbasins, two of which lie beneath the study area: the Delta-Mendota Subbasin and the Tracy Subbasin. Figure 3.16-3 identifies the groundwater basins in the study area.

The Delta-Mendota Subbasin is bounded on the west by the Tertiary and older marine sediments of the Coast Ranges. Groundwater in the Delta-Mendota Subbasin occurs in three water-bearing zones. These include the lower zone, which contains confined fresh water in the lower section of the Tulare Formation, an upper zone which contains confined, semi-confined, and unconfined water in the upper section of the Tulare Formation and younger deposits, and a shallow zone which contains unconfined water within about 25 feet of the land surface. The total storage capacity of this subbasin is estimated to be 30,400,000 acre-feet (af) to a depth of 300 feet and 81,800,000 af to the base of fresh groundwater. The groundwater in this subbasin is characterized by mixed sulfate to bicarbonate types in the northern and central portion with areas of sodium chloride and sodium sulfate waters in the central and southern portion. Total dissolved solids (TDS) values range from 400 to 1,600 milligram per liter (mg/L) in the northern portion of the subbasin. Shallow, saline groundwater occurs within about 10 feet of the ground surface over a large portion of the subbasin. There are also localized areas of high iron, fluoride, nitrate, and boron in the subbasin (DWR, 2003).



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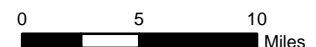
Source: WAPA SNR, Aspen EG, US Geological Survey

- Substation
- Proposed New Substations
- Proposed Project Corridor
- Corridor Alternatives
- Proposed Project Study Area
- Alternatives Study Area

- Waterbody
- Groundwater Subbasins

Figure 3.16-3

Groundwater Basins



The Tracy Subbasin is defined by the extent of unconsolidated to semiconsolidated sedimentary deposits that are bounded by the Diablo Range on the west; the Mokelumne and San Joaquin Rivers on the north; the San Joaquin River to the east; and the San Joaquin–Stanislaus County line on the south. The Tracy Subbasin is comprised of continental deposits of Late Tertiary to Quaternary age. The cumulative thickness of these deposits increases from a few hundred feet near the Coast Range foothills on the west to about 3,000 feet along the eastern margin of the basin. The storage capacity of the southern portion of the currently defined Tracy Subbasin is approximately 1,300,000 af. The southern part of the subbasin is characterized by calcium-sodium type water. TDS ranges from 210 to 7,800 mg/L and averages about 1,190 mg/L. Areas of poor water quality exist throughout the subbasin. Areas of elevated chloride occur in several areas including: along the western side of the subbasin; in the vicinity of the City of Tracy; and along the San Joaquin River. Areas of elevated nitrate occur in the northwestern part of the subbasin and in the vicinity of the City of Tracy. Areas of elevated boron occur over a large portion of the subbasin from a point south of Tracy and extending to the northwest side of the subbasin (DWR, 2003).

3.16.1.2 Regulations, Plans, and Standards

- The Clean Water Act, 33 U.S.C. §§ 1251 *et seq.*, establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters.
- The Oil Pollution Act, 33 U.S.C. §§ 2701 *et seq.*, streamlined and strengthened the EPA's ability to prevent and respond to catastrophic oil spills. This Act requires oil storage facilities and vessels to submit to the federal government plans detailing how they will respond to large discharges.
- The National Flood Insurance Program (NFIP). The NFIP offers flood insurance to homeowners, renters, and business owners if their community participates in the NFIP. Participating communities agree to adopt and enforce ordinances that meet or exceed FEMA requirements to reduce the risk of flooding.
- U.S. Safe Drinking Water Act Section, 42 U.S.C. §§ 300f-300j. The Safe Drinking Water Act (SDWA) is the main federal law that ensures the quality of Americans' drinking water. Under SDWA, EPA sets standards for drinking water quality and oversees the states, localities, and water suppliers who implement those standards.
- The Porter-Cologne Water Quality Control Act. This act established the State Water Resources Control Board and nine Regional Water Quality Control Boards, assigning these agencies the responsibility for regulating water quality in California. This act created a water quality policy, enforced standards for water quality, and regulated the discharge of pollutants from point and non-point sources.
- The California Fish and Game Code Section 1602. This Section requires an entity to notify CDFW of any proposed activity that may substantially modify a river, stream, or lake. This includes ephemeral streams, desert washes, and watercourses with a subsurface flow.
- The California Water Code Section 13260. This Section requires notification of the appropriate Regional Board for any discharge of waste that could affect the quality of waters of the state.

3.16.2 Corridor Alternatives

3.16.2.1 Patterson Pass Road Alternative

The alternative study area largely overlaps the Proposed Project. The existing conditions in this segment will be similar to those described above for the Proposed Project. This study area intersects 10 Watersheds, including: Corral Hollow Creek, Crow Creek–San Joaquin River, Del Puerto Creek, Ingram Creek–San Joaquin River, Lone Tree Creek–San Joaquin River, Lower Los Banos Creek, Mud Slough–San Joaquin River, Old River, Orestimba Creek, and Salado Creek–San Joaquin River. Numerous small, unnamed streams flow down from the Diablo Range, across this alternative study area, and towards the San Joaquin River and

valley floor. Named streams that cross or run immediately downstream of the study area include: Arkansas Creek, Corral Hollow Creek, Crow Creek, Del Puerto Creek, Garzas Creek, Hospital Creek, Ingram Creek, Little Salado Creek, Lone Tree Creek, Martin Creek, Mustang Creek, Orestimba Creek, Quinto Creek, and Salado Creek. In addition to the named streams listed above, named surface water features within the study area include the Hetch Hetchy Aqueduct and the Governor Edmund G. Brown California Aqueduct. This alternative study area is underlain by both the Tracy and Delta-Mendota groundwater Subbasins.

3.16.2.2 Butts Road Alternative

The alternative study area lies farther to the west between Butts Road and the San Luis Substation in comparison to the Proposed Project. The affected environment for this alternative is very similar to the Proposed Project. This study area intersects two Watersheds, including: Lower Los Banos Creek and San Luis Creek. This alternative study area is crossed by one named stream and three canals: Quinto Creek, the Delta-Mendota Canal, the San Luis Wasteway, and the Governor Edmund G. Brown California Aqueduct. This alternative study area is underlain by the Delta-Mendota groundwater Subbasin, and does not cross any 100-year floodplains.

3.16.2.3 West of Cemetery Alternative

The alternative study area overlaps the Proposed Project between Butts Road and the San Luis Substation. However, much of the alternative study area lies farther west of the Proposed Project and traverses more varying terrain. This study area intersects two Watersheds, including: Lower Los Banos Creek and San Luis Creek. This alternative study area is crossed by two named streams and three canals: Quinto Creek, Romero Creek, San Luis Wasteway, the Delta-Mendota Canal and the Governor Edmund G. Brown California Aqueduct. This alternative study area is underlain by the Delta-Mendota Groundwater Subbasin, and does not cross any 100-year floodplains.

3.16.2.4 West of O'Neill Forebay 70-kV Alternative

The alternative study area lies within the San Luis Creek Watershed. This alternative study area is crossed by three canals: the Delta-Mendota Canal, the Governor Edmund G. Brown California Aqueduct, and the San Luis Wasteway. This alternative study area is underlain by the Delta-Mendota Groundwater Subbasin, and does not cross any 100-year floodplains.

3.16.2.5 San Luis to Dos Amigos Alternative

The alternative study area largely overlaps the Proposed Project between the San Luis Substation and the Dos Amigos Substation. This study area intersects two Watersheds, including: Lower Los Banos Creek and Upper Los Banos Creek. This alternative study area is crossed by three named streams and two canals: Los Banos Creek, Ortigalita Creek, Salt Creek, the Delta-Mendota Canal, and the Governor Edmund G. Brown California Aqueduct. This alternative study area is underlain by the Delta-Mendota Groundwater Subbasin, and does not cross any 100-year floodplains.

3.16.2.6 Billy Wright Road Alternative

In the vicinity of the Los Banos Substation, the alternative study area largely overlaps the Proposed Project study area. South of the Los Banos Substation, the alternative study area lies farther west of the Proposed Project and traverses more rugged terrain. This study area intersects four Watersheds, including: Lower Los Banos Creek, Mud Sough, San Luis Creek, and Upper Los Banos Creek. This alternative study area is crossed by three named streams and two canals, including: Los Banos Creek, Ortigalita Creek, Salt Creek, the Delta-Mendota Canal, and the Governor Edmund G. Brown California Aqueduct. This alternative study area is underlain by the Delta-Mendota Groundwater Subbasin, and does not cross any 100-year floodplains.

Chapter 4

Environmental Consequences

4.1 Introduction

This chapter examines the potential direct, indirect and cumulative environmental effects of the Proposed Project and the alternatives retained for analysis. Each section includes the criteria used to determine CEQA significance, a list of EPMs applicable to that issue area that are considered part of the Project, a discussion of potential impacts for each segment of the Proposed Project and alternatives, and where applicable, mitigation measures that would lessen or avoid impacts.

4.1.1 Environmental Consequences Approach

Impact Classification

The Proposed Project is subject to federal and state environmental review requirements. Project documentation, therefore, has been prepared in compliance with both NEPA and CEQA. One of the primary differences between NEPA and CEQA is the way significance is determined. Under NEPA, significance is used to determine whether an EIS, or a lower level of documentation, will be required. NEPA requires that an EIS be prepared when the proposed federal action (project) *as a whole* has the potential to “significantly affect the quality of the human environment.” The determination of significance is based on context and intensity (see definitions below). Some impacts determined to be significant under CEQA may not be of sufficient magnitude to be determined significant under NEPA. Under NEPA, once a decision is made regarding the need for an EIS, it is the magnitude of the impact that is evaluated and no judgment of its individual significance is deemed important for the text. NEPA does not require that a determination of significant impacts be stated in the environmental documents.

CEQA, on the other hand, does require the Authority to identify each “significant effect on the environment” resulting from the project and ways to mitigate each significant effect. If the project may have a significant effect on any environmental resource, then an EIR must be prepared. Each and every significant effect on the environment must be disclosed in the EIR and mitigated if feasible. In addition, the CEQA Guidelines list a number of mandatory findings of significance, which also require the preparation of an EIR. There are no types of actions under NEPA that parallel the findings of mandatory significance of CEQA. The standards for determining significant impacts under CEQA are unique to each issue area; however, the classification of the impacts was uniformly applied in accordance with the following definitions:

- Significant; cannot be mitigated to a level that is less than significant (Class I)
- Significant; can be mitigated to a level that is less than significant (Class II)
- Less than significant; no mitigation required (Class III)

Under NEPA, beneficial impacts of a proposed action are also relevant considerations in the environmental analysis.

Definition of Terms

The potential impacts of the Proposed Project and alternatives are described in terms of their type, context, duration, and intensity. These terms are defined as follows:

- **Type** describes the impact as beneficial or adverse, direct or indirect.
 - Beneficial: A positive change in the condition or appearance of the resource or a change that moves the resource toward a desired condition.
 - Adverse: A change that moves the resource away from a desired condition or detracts from its appearance or condition.
 - Direct: An effect on a resource by an action at the same place and time. For example, soil compaction from construction traffic is a direct impact on soils.
 - Indirect: An effect from an action that occurs later or perhaps at a different place and often to a different resource, but is still reasonably foreseeable.
 - Cumulative: Impacts to resources that are added to impacts from other past, present, or foreseeable actions.
- **Context** describes the area (site-specific) or location (local or regional) in which the impact will occur.
- **Duration** is the length of time an effect will occur.
 - Short-term impacts generally occur during construction or for a limited time thereafter, generally less than two years, by the end of which the resources recover from their preconstruction conditions.
 - Long-term or permanent impacts last beyond the construction period, and the resources may not regain their preconstruction conditions for a longer period of time or not at all.
- **Intensity** reflects the amount of impact on each resource as a result of the Proposed Project. The levels of intensity are defined as follows:
 - Negligible: Impact at the lowest levels of detection with barely measurable consequences.
 - Minor: Impact is measurable or perceptible, with little loss of resource integrity and changes are small, localized, and of little consequence.
 - Moderate: Impact is measurable and perceptible and would alter the resource but not modify overall resource integrity, or the impact could be mitigated successfully in the short-term.
 - Major: Impacts would be substantial, highly noticeable, and long-term.

Project Area Segments

To facilitate a fair and equal comparison of impacts between the Proposed Project and alternatives, the Project area was divided into the following four segments, as shown in Figures 2-6a through 2-6e:

- North Segment: between the Tracy Substation and Patterson Pass Road
- Central Segment: between Patterson Pass Road and Butts Road
- San Luis Segment: between Butts Road and the Los Banos Substation, including the 70-kV routes to San Luis Substation
- South Segment: between Los Banos and Dos Amigos Substations, including the 230-kV routes from San Luis Substation

The Proposed Project and alternatives were compared within each segment to identify the Environmentally Preferred Corridor Alternative as described in Section 2.4.

Disturbance Assumptions

Final design and engineering details, such as exact locations and quantities of Project components (e.g., structures, access roads, staging areas) are not yet known. The impact analysis therefore used various conservative assumptions regarding the amount of disturbance, as described in Appendix E.

Operation Voltage Options

Depending on the participation in the Project by an eligible customer, Western and the Authority may decide a lower voltage for the 500-kV segment of the SLTP is warranted. The operation voltage options are: (1) to construct the proposed 500-kV segment, but operate it at 230-kV, or (2) to construct and operate the proposed 500-kV segment as 230-kV (refer to Section 2.1.1.4 for additional information).

As described below, the operation voltage options would have reduced impacts for some resource areas in comparison to the proposed 500-kV segment. These differences would be negligible to minor. Therefore, the impact analysis of the Proposed Project, which includes the 500-kV segment, in Section 4.2 through 4.16 represents the reasonable worst case scenario with regard to impacts.

500-kV Transmission Line operated at 230-kV

This operation voltage option would have less operational corona noise and EMF exposure in comparison to the proposed 500-kV segment (refer to Sections 4.9 (Noise) and 4.11 (Public Health and Safety) for information on noise impacts and EMF exposure from the Proposed Project).

230-kV Transmission Line

This operation voltage option would require approximately 33% less temporary disturbance area than the 500-kV segment as the temporary disturbance area required for structure footings is smaller (0.6 acre for a 230-kV tower versus 0.9 acre for a 500-kV tower; see Appendix E); permanent disturbance area for tower footings would be the same. Towers would be slightly shorter so there would be a negligible reduction in aesthetic impacts (refer to Figures 2-2 and 2-3 to compare 230-kV and 500-kV structures). Additionally, the easement for a 230-kV transmission line would be narrower than a 500-kV transmission line (125 to 175 feet wide for a 230-kV transmission line and 200 to 250 feet wide for a 500-kV transmission line), so there would be a negligible reduction in agriculture and land use and impacts associated with encroachment. Refer to sections 4.2 (Agriculture) and 4.8 (Land Use) for information on agricultural operations with transmission line easements and conflicts with existing land uses within transmission line easements.

If a 230-kV transmission line is constructed instead of the proposed 500-kV segment, the proposed Tracy East and Los Banos West Substations would not be needed. This would eliminate any impacts associated with substation construction.

4.2 Agriculture

4.2.1 Thresholds of Significance

The Proposed Project and alternatives would have significant, adverse effects on agriculture if any activity associated with their construction, operation, or maintenance would:

- Conflict with existing zoning for agricultural use, or a Williamson Act contract (Impact AG-1);
- Result in the conversion of Important Farmlands to non-agricultural use (Impact AG-2);
- Result in changes to the existing environment that, due to their location or nature, would impair the use of agricultural land (Impact AG-3); or
- Result in uncompensated loss of crop production or the foreclosure of future land uses (Impact AG-4).

4.2.2 Environmental Protection Measures

- On completion of the work, all work areas except permanent access roads would be returned to preconstruction conditions unless otherwise specified by the landowner/manager.
- During construction, movement would be limited (to the greatest extent feasible) to the access roads and within a designated area in the easement to minimize damage to agricultural land.
- Damaged fences and gates would be repaired or replaced to restore them to their preconstruction condition.
- Post proper signage in areas within the easement that will require temporary closure or limited access to accommodate certain land uses. Where feasible, construction activities would be scheduled to minimize impacts to agricultural activities. If this is not feasible and damage occurs, the landowner may be compensated.

4.2.3 Proposed Project

Impact AG-1 Conflict with existing zoning for agricultural use, or a Williamson Act contract
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The purpose of the Williamson Act is to preserve agricultural and open space lands by discouraging premature and unnecessary conversion to urban uses. As described in California Government Code Section 51238, utility corridors are accepted as a compatible use under Williamson Act contracts. The East County Area Plan under the Alameda General Plan identifies a portion of the Proposed Project corridor in the North Segment for expansion as Large Parcel Agriculture (defined in Section 3.2.1.2). This designation includes utility corridors as a permitted compatible use. Therefore, the Proposed Project would not conflict with any local zoning for agriculture use or a Williamson Act contract within the Project area. Under CEQA, there would be no impact. This impact would be the same for the North, Central, San Luis, and South segments.

Impact AG-2 Result in the conversion of Important Farmlands to non-agricultural use

Tables 4.2-1 and 4.2-2 present the acreage of impacts to Important Farmland including Prime Farmland, Unique Farmland, Farmland of Local Importance, and Farmland of Statewide Importance (definitions provided in Table 3.2-3) within the Proposed Project corridors and the study area, respectively. The exact locations of project components (i.e., access roads, structures, pull sites, and material storage) are not yet known. However, it is certain that the placement of all tower structures and pull sites will be located within the Proposed Project corridor. Therefore, the disturbance acreage presented in Table 4.2-1

is calculated using a conservative approach that compares the disturbance assumptions for new structures and pull sites (presented in Appendix E) with the number of acres of Important Farmlands within each segment of the Proposed Project corridor. Other project components, including existing roads, new access roads, and material storage may be placed outside of the Proposed Project corridor. These components are analyzed similarly but within the study area, as defined in Section 3.1.

There are 72,637 acres of Important Farmland within the study area (about 22.2 percent of the total study area) and 2,087 acres within the Proposed Project corridor (about 15.5 percent of the total Proposed Project corridor). Prime Farmland is primarily located in the North and Central segments of the study area.

Construction of the Proposed Project could temporarily convert Important Farmland to non-agricultural use as shown in Tables 4.2-1 and 4.2-2. However, pursuant to EPMs, Western would implement the Proposed Project in a manner that includes the avoidance of agriculture resources whenever feasible and the restoration of construction sites to preconstruction conditions to the greatest extent feasible. During construction, movement would be limited to the designated access roads and within a designated area in the easement to minimize damage to agricultural land. Therefore, temporary impacts to farmlands would be negligible.

Construction of access roads and material storage sites could, as a worst case scenario, permanently convert up to 93.1 acres of Important Farmland to non-agricultural use within the study area. This comprises 21.9 acres of Prime Farmland, 66.7 acres of Farmland of Local Importance, 3.8 acres of Unique Farmland, and 0.8 acre of Farmland of Statewide Importance. Transmission structures and substations could permanently convert up to 49.9 acres of Important Farmland to non-agricultural use. These 49.9 acres represent 31.7 acres of Prime Farmland, 18.0 acres of Farmland of Local Importance, and 0.2 acre of Unique Farmland. However, the Important Farmlands are distributed through the study area such that, in most cases, the transmission towers and Project components could be located outside of Important Farmlands (see Figures 3.2-1a through 3.2-1d). Furthermore, agriculture operations could continue without interruption within Western's easements. Therefore, impacts to agriculture would be less than significant.

Operations and maintenance activities would generally be performed from existing access roads. Although some repairs could temporarily disturb active agricultural land, impacts would be minimal.

<p>Impact AG-3 Result in changes to the existing environment that, due to their location or nature, would impair the use of agricultural land</p>
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Construction and maintenance activities could temporarily impede the operation of or access to agriculture production lands and facilities. In addition, construction activities along access roads and spur roads would also cause a temporary increase in vehicular traffic that may result in a short-term preclusion of farming and grazing activities. However, pursuant to EPMs, Western would implement the Proposed Project in a manner that includes the avoidance of agriculture resources whenever feasible and the restoration of construction sites to preconstruction conditions to the extent feasible. During construction and maintenance, movement would be limited to the designated access roads and within a designated area in the ROW to minimize damage to agricultural land. Therefore, these activities would result in minor, short-term impacts to agriculture resources. During operation, the presence of transmission lines is generally compatible with agriculture use (e.g., agriculture operations could continue within the easement and around the towers) and would not substantially impair the use of agriculture land. Therefore, the Proposed Project would result in minor long-term impacts. Under CEQA, this would result in a less than significant impact. This impact would be the same for the North, Central, San Luis, and South Segments.

Impact AG-4 Result in uncompensated loss of crop production or the foreclosure of future land uses.
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Construction and operation activities that could interfere with agricultural crop production would include the installation of 230-kV and 500-kV transmission structures, construction of new access and spur roads, wire stringing, and maintenance actions. Construction activities and the presence of construction equipment could temporarily interfere with agricultural operations by damaging crops or soil, impeding access to certain fields or plots of land, obstructing farm vehicles, or potentially disrupting drainage and irrigation systems. The work procedures for major repairs, such as replacement of towers or conductors, would be essentially identical to that of new construction. However, construction and operation of the Proposed Project would not result in the permanent foreclosure of future agriculture use. During operation of the Proposed Project, the presence of the transmission towers and conductors could result in minor impacts to agricultural operations. Crop dusters would need to make additional passes around transmission lines and structures to achieve the same coverage as fields without structures and transmission lines. Additionally, impacts on the ground would include additional passes for tilling, planting, and harvesting to maneuver around structures. Transmission lines and structures can also create potential safety hazards because they present additional obstacles to avoid during aerial inspections. In areas where the Project corridor parallels existing transmission lines, the addition of new transmission lines would not add to these impacts that already exist. Pursuant to EPMs, construction and maintenance activities would be scheduled to minimize impacts to agricultural activities. If avoidance is infeasible and damage occurs, the landowner would be compensated. Therefore, this impact would be minor. Under CEQA, this impact would be less than significant. This impact would be the same for the North, Central, San Luis, and South segments.

4.2.4 Corridor Alternatives

Western and the Authority have not identified the Agency-preferred route; therefore, the analysis below combines each alternative within each segment with the Proposed Project corridors from the other segments to determine whether the significance thresholds in Section 4.2.1 would be exceeded.

4.2.4.1 Central Segment

Patterson Pass Road Alternative

This alternative is the same length, has the same length of new access roads, and has the same number of support structures as the Proposed Project. The potential disturbance acres to Important Farmlands within the Proposed Project corridor and the study area presented in Tables 4.2-1 and 4.2-2 would be slightly less than the Proposed Project. Overall, impacts to agriculture resources would be similar to that of the Proposed Project. CEQA significance determinations are the same as the Proposed Project.

Table 4.2-1. Disturbance to Important Farmlands within the Project Study Area

Corridor Segment	Local Importance		Prime Farmland		Unique		Statewide Importance		Total	
	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)
North Segment (Proposed Project)	2.1	6.1	2.3	6.6	0.3	0.9	0.0	0.1	4.7	13.7
Central Segment (Proposed Project)	1.9	27.4	0.7	9.5	0.1	2.1	0.0	0.2	2.7	39.2
Patterson Pass Road Alternative	1.6	25.9	0.6	9.7	0.1	2.1	0.0	0.2	2.4	37.8
San Luis 500-kV Segment (Proposed Project)	1.4	9.5	0.3	1.8	0.0	0.1	0.0	0.0	1.7	11.3
Butts Road Alternative	1.0	7.3	0.2	1.4	0.0	0.1	0.0	0.0	1.2	8.7
West of Cemetery Alternative	0.9	14.4	0.2	2.7	0.0	0.1	0.0	0.0	1.1	17.2
San Luis 70-kV Segment (Proposed Project)	1.5	0.3	0.1	0.0	0.1	0.0	0.0	0.0	1.8	0.3
West of O'Neill Forebay Alternative	1.2	0.2	0.5	0.1	0.0	0.0	0.0	0.0	1.8	0.3
South Segment (Proposed Project)	2.6	23.7	0.4	4.0	0.1	0.7	0.1	0.5	3.1	28.9
San Luis to Dos Amigos Alternative	0.7	6.0	0.4	3.9	0.1	0.7	0.1	0.5	1.2	11.1
Billy Wright Road Alternative	1.1	15.2	0.2	2.3	0.0	0.4	0.0	0.3	1.3	18.2
Proposed Project Total (acres)									12.2¹	93.1¹

Refer to Section 3.1 for a definition of the study area). As these buffers overlap between segments, acreages cannot be added together to equal the sum of the whole. Impact acres are based on the disturbance assumptions presented in Appendix E.

1 - The totals for the Proposed Project study equal the sum of the Proposed Project segments with the exception of the San Luis 70-kV Segment as this segment falls within the San Luis 500-kV segment

Source: California Department of Conservation, Division of Land Resource Protection, 2014

Table 4.2-2. Disturbance to Important Farmlands within Project Corridors										
Corridor Segment	Local Importance		Prime Farmland		Unique		Statewide Importance		Total	
	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)
North Segment (Proposed Project)	5.7	7.4	16.4	21.5	0.0	0.0	0.0	0.0	22.1	29.0
Central Segment (Proposed Project)	20.7	2.0	9.7	10.2	1.8	0.2	0.0	0.0	32.1	12.3
Patterson Pass Road Alternative	20.3	2.0	6.2	7.1	0.4	0.0	0.0	0.0	26.9	9.1
San Luis Segment (Proposed Project)	5.5	6.3	0.0	0.0	0.0	0.0	0.0	0.0	5.5	6.3
Butts Road Alternative	3.4	3.8	0.0	0.0	0.0	0.0	0.0	0.0	3.4	3.8
West of Cemetery Alternative	2.5	2.6	0.0	0.0	0.0	0.0	0.0	0.0	2.5	2.6
San Luis Segment – 70 kV (Proposed Project)	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0
West of O'Neill Forebay Alternative	6.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.2	0.0
South Segment (Proposed Project)	16.9	2.3	0.6	0.0	0.0	0.0	0.0	0.0	17.5	2.3
San Luis to Dos Amigos Alternative	16.9	2.3	0.2	0.0	0.0	0.0	0.0	0.0	17.1	2.3
Billy Wright Road Alternative	6.9	0.9	0.0	0.0	0.0	0.0	0.0	0.0	6.9	0.9
Proposed Project Total (acres)									77.2¹	49.9¹

Impact acreage is within the Proposed Project or alternative corridor (refer to Section 3.1 for a definition of the Proposed Project corridor). Impact acres are based on the disturbance assumptions presented in Appendix E.

1 - The totals for the Proposed Project study equal the sum of the Proposed Project segments with the exception of the San Luis 70-kV Segment as this segment falls within the San Luis 500-kV segment

Source: California Department of Conservation, Division of Land Resource Protection, 2014

4.2.4.2 San Luis Segment

Butts Road Alternative

This alternative corridor would be 0.5 mile longer than the Proposed Project, would have two more support structures. The impacts to agriculture resources would be similar to that of the Proposed Project in type and context; however, the duration and intensity would likely be slightly greater than for the Proposed Project due to longer length of the corridor. The potential disturbance acres to Important Farmlands with the Proposed Project corridor and study area presented in Tables 4.2-1 and 4.2-2 would be slightly less than the San Luis Segment of the Proposed Project. CEQA significance determinations are the same as the Proposed Project.

West of Cemetery Alternative

This alternative corridor would be 1.2 miles longer than the Proposed Project, would have six more support structures. The potential disturbance acres to Important Farmlands within the Proposed Project corridor and study area presented in Tables 4.2-1 and 4.2-2 would be less than the Proposed Project. Overall, impacts to agriculture resources would be similar to that of the Proposed Project. CEQA significance determinations are the same as the Proposed Project.

West of O'Neill Forebay 70-kV Alternative

This alternative is the same length, has the same length of new access roads, and has the same number of support structures as the Proposed Project. The potential disturbance acres to Important Farmlands presented in Tables 4.2-1 and 4.2-2 would be slightly less than the Proposed Project. Overall, impacts to agriculture resources would be similar to that of the Proposed Project. CEQA significance determinations are the same as the Proposed Project.

4.2.4.3 South Segment

San Luis to Dos Amigos Alternative

This alternative has the same length of new access roads and same number of support structures as the Proposed Project, and therefore, would have similar impacts to agriculture resources as the Proposed Project. The potential disturbance acres to Important Farmlands presented in Tables 4.2-1 and 4.2-2 are very similar to the Proposed Project. Overall, impacts to agriculture resources would be slightly less than that of the Proposed Project. CEQA significance determinations are the same as the Proposed Project.

Billy Wright Road Alternative

This alternative corridor would be 1.5 miles longer and have 8 more support structures than the Proposed Project. The potential disturbance acres to Important Farmlands within the Proposed Project corridors and study area presented in Table 4.2-1 would be less than the Proposed Project. Overall, impacts to agriculture resources would be similar to that of the Proposed Project. CEQA significance determinations are the same as the Proposed Project.

4.2.5 No Action/No Project Alternative

Under the No Action/No Project Alternative, Western would not construct the SLTP. There would be no direct impacts to agriculture.

4.3 Air Quality and Climate Change

4.3.1 Thresholds of Significance

The Proposed Project and alternatives would have significant adverse effects on air quality if any activity associated with their construction and O&M would:

- Violate ambient federal and/or state air quality or emissions standards applicable to the study area, or increase the frequency or severity of any existing violation of state and/or federal ambient air quality standard (Impact AQ-1);
- Expose sensitive receptors to detrimental pollution concentrations (Impact AQ-2);
- Contribute to a collective or combined air quality effect, including existing and foreseeable other projects, that leads to violation of air quality standards, even if the individual effect of the project/activity is relatively minor compared with other sources (Impact AQ-3);
- Produce air contaminants above the level of significant cancer risk, if any. The State of California defines the level of significant cancer risk as more than 10 confirmed cases per million individuals exposed (Impact AQ-4);
- Conflict with adopted environmental plans and goals as provided in the State Implementation Plan (SIP) or regional air quality plan (Impact AQ-5);
- Emissions exceed conformity *de minimis* thresholds (Impact AQ-6);
- Greenhouse gas emissions (GHG) are generated, either directly or indirectly, that may have a substantial impact on the environment (Impact AQ-7); or
- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs (Impact AQ-8).

Quantitative thresholds recommended by air quality management agencies and derived from the applicable regulations, plans and standards are listed in Table 4.3-1.

Table 4.3-1. EPA and Air District Emissions Thresholds

PM10 or PM2.5	
EPA General Conformity Rate – PM10	100 tons/year
EPA General Conformity Rate – PM2.5	100 tons/year
SJVAPCD Construction Threshold of Significance	15 tons/year*
BAAQMD Construction Threshold of Significance (PM2.5 Exhaust Emissions Only)	54 lbs/day
BAAQMD Construction Threshold of Significance (PM10/PM2.5 Fugitive Dust)	Best management practices*
NOx	
EPA General Conformity Rate – NOx	10 tons/year
SJVAPCD Construction Threshold of Significance	10 tons/year
BAAQMD Construction Threshold of Significance	54 lbs/day
Volatile Organic Compounds (VOC)	
EPA General Conformity Rate – VOC	10 tons/year
SJVAPCD Construction Threshold of Significance	10 tons/year
BAAQMD Construction Threshold of Significance	54 lbs/day

4.3.2 Environmental Protection Measures

- Project participants will comply with applicable federal, state, and local rules and regulations regarding air quality.
- Equipment and vehicles will be operated in compliance with applicable federal, state, and local rules and regulations regarding air quality.
- Vehicles and equipment used in construction and O&M of the Proposed Project or alternatives will maintain appropriate emissions control equipment and be appropriately permitted.
- Regular watering of exposed soils and unpaved access roads will be conducted during the construction period.
- Engine idling will be in accordance with an idling policy compliant with the California state regulations.
- If new sulfur hexafluoride equipment is installed as part of the Project, Western will include this information in their annual reports to California Air Resources Board and the Environmental Protection Agency. Best management practices will be followed to eliminate sulfur hexafluoride emissions during installation and commissioning.

4.3.3 Proposed Project

Potential air emissions were analyzed for all phases of the Project, including construction and O&M, and for all alternatives. While construction activities can emit substantial amounts of air pollution, the Project would have no emissions during operation, and only minor emissions during maintenance activities. Therefore, this evaluation focuses primarily on potential air emissions that could occur during construction of each alternative from fugitive dust and construction equipment exhaust, though O&M and decommissioning activities are also discussed. Air quality impacts would be essentially proportional to the number of support structures and the combined length of new access roads that would be constructed for each segment.

During construction, impacts to air quality would be caused by motor vehicle and mechanized equipment emissions, and fugitive dust created by construction activities such as auguring of transmission tower foundations and excavation for new access roads. The equipment used and the length of construction is discussed in detail in Section 2.1.3. Diesel engine emissions would be sporadic and short-term and cause direct impacts to local air quality, but would dissipate quickly.

Impact AQ-1 Violate applicable ambient federal and/or state air quality or emissions standards to the study area, or increase the frequency of severity of any existing violation of applicable state and/or federal ambient air quality standard.

Emissions during construction and O&M activities would come primarily from equipment and vehicle exhaust and fugitive dust created by ground disturbing activities. As shown in Table 2-4, construction activities at any one time could involve various equipment and vehicles, depending on scheduling and manpower. However, not all activities are likely to be conducted simultaneously. For example, conductor stringing is not likely to occur until all structures are completed; also, not all machinery involved in any one activity will be running at the same time. As stated in the proposed construction schedule in Table 2-2 of Section 2.1.3, construction would occur over approximately 525 days, beginning in 2018. Emissions for the entire construction period were estimated based the current construction plan as described in Section 2.1.3 (assumptions are presented in Appendix I, Air Quality Emission Calculations). For planning purposes, all construction emissions have been presumed to occur in San Joaquin Valley Air Basin,

although a portion of the emissions related to construction of the new Tracy East Substation would occur in the jurisdiction of the BAAQMD, where the thresholds are generally less stringent. Construction would not be likely to exceed the BAAQMD thresholds. Based on the preliminary estimate of construction emissions shown in Table 4.3-2, construction emissions could exceed the SJVAPCD threshold values for NO_x and PM₁₀, but not PM_{2.5} or VOC, depending on the extent of overlapping construction activities or phases.

Table 4.3-2. Estimated Construction-Phase Emissions (tons per year)

Calendar Year	NO _x	VOC	PM ₁₀	PM _{2.5}	CO
Year 1 (2018)	26.2	1.6	29.9	5.6	33.7
Year 2 (2019)	26.1	1.6	39.2	6.8	33.6
Year 3 (2020)	6.6	3.5	9.8	1.5	9.0
General Conformity Threshold for San Joaquin Valley Air Basin	10	10	100	100	—
SJVAPCD Construction Threshold of Significance	10	10	15	15	—

Source: Appendix I.

Note: “—” means no threshold applies.

Construction of all segments of the Proposed Project simultaneously, while unlikely, could result in an exceedance of air quality or emissions standards in the region. Therefore, under CEQA, this impact would be significant. Feasible mitigation would include steps that are recommended by SJVAPCD in its Guidance for Assessing and Mitigating Air Quality Impacts (SJVAPCD, 2015); which construction equipment operators can implement in conjunction with the EPMs. These feasible practices are included in Mitigation Measure AQ-1 (Reduce or offset construction equipment emissions).

Mitigation Measures for Impact AQ-1

MM AQ-1 Reduce or offset construction equipment emissions. Western will specify that construction contractors should:

- Use alternative fueled or catalyst-equipped diesel construction equipment or construction equipment powered by engines meeting, at a minimum, Tier 3 or higher emission standards, as set forth in §2423 of Title 13 of the California Code of Regulations, and Part 89 of Title 40 Code of Federal Regulations.
- Minimize idling time (e.g., 5 minute maximum).
- Limit the hours of operation of heavy duty equipment and/or the amount of equipment in simultaneous use.
- Replace fossil-fueled equipment with electrically driven equivalents (provided they are not run via a portable generator set).
- Curtail construction during periods of high ambient pollutant concentrations; this may include ceasing of construction activity during the peak-hour of vehicular traffic on adjacent roadways.
- Implement construction activity management (e.g., rescheduling activities to reduce short-term impacts).

Upon completion of detailed engineering plans for the SLTP and prior to commencing construction, Western will conduct a detailed air quality analysis of the construction phase of the project to determine the feasibility and necessity of financing additional off-site emission reduction programs to offset emissions to levels that are less than the EPA General Conformity thresholds.

Level of Significance after Mitigation

Implementation of EPMs would reduce NO_x, PM₁₀, PM_{2.5}, and VOC emissions to the maximum extent practical. However, NO_x and PM₁₀ emissions still could exceed local thresholds of significance and NO_x could exceed the EPA General Conformity threshold rate for the San Joaquin Valley Air Basin. Because of the linear nature of the Project, construction emissions would be sporadic and spread over the length of the route. Emissions would not be expected to contribute to new violations of ambient air quality standards, or increase the frequency or severity of existing violations. Emissions would not be expected to substantially contribute to nonattainment of standards. Construction emissions are included as a category in the San Joaquin Valley emissions inventory for attainment demonstration purposes. Western has adopted a proactive stance by implementing EPMs that mirror measures recommended by the air districts. Therefore, the Project would comply with air district requirements.

Implementation of off-site emission reduction programs identified in Mitigation Measure AQ-1 would require detailed engineering of the Project, development of a construction schedule, and quantification of construction activity emissions. Determining the final quantity of offsets, and therefore the cost of any potential emission reduction programs, requires quantification of actual construction emissions, which depends on final engineering that is not available at this time. Mitigation Measure AQ-1 requires Western to reduce construction emissions and determine whether financing additional off-site emission reduction programs would be feasible and necessary to demonstrate that the overall emission levels are below the EPA General Conformity thresholds listed in Table 4.3-1. The EPA requires that projects with construction emissions over the General Conformity thresholds provide mitigation during the period that is contemporaneous with the schedule for construction (Vol. 75 *Federal Register*, page 17268, April 5, 2010). Until final engineering occurs and the construction schedule is known, it would be infeasible for Western to implement an off-site emissions reduction program that provides reductions during the schedule for construction. Under CEQA, implementation of Mitigation Measure AQ-1 to the extent feasible would reduce this impact to a less than significant level. This impact would be the same in the North, Central, San Luis, and South segments.

Impact AQ-2 Expose sensitive receptors to detrimental pollution concentrations.

Sensitive receptors near the Project area may be affected by a temporary increase in fugitive dust. Residences and other sensitive areas located within 1 mile of the Proposed Project corridor and the distances to the edge of the Project area are listed in Table 4.3-3.

Table 4.3-3. Sensitive Receptors in the Project Area

North Segment	
The community of Mountain House	0.5 mile
Mountain house elementary school	0.5 mile
A group of residences near the intersection of W. Grantline Road and S. Central Parkway south of Mountain House	0.2 mile
The San Joaquin Delta College South Campus at Mountain House	0.2 mile
A group of residences near the intersection of W. Patterson Pass Road and Midway Road	0.25 mile
Central Segment	
A group of residences off the southern end of S. Tracy Boulevard	0.2 mile
A group of residences off Vernalis Road near the San Francisco Water Public Utilities Commission's Tesla Water Treatment Facility	0.3 mile

Table 4.3-3. Sensitive Receptors in the Project Area

A single residence approximately 1 mile west of South Bird Road	0.2 mile
A single residence at the end of Gaffery Road	0.3 mile
A single residence on Khalsa Road	0.2 mile
Two residences at the end of Ingram Creek Road	0.1 mile
A single residence adjacent to southbound I-5 near Sperry Avenue	0.9 mile
One to two residences on Oak Flat Road, one of which may have been converted to another use	0.7 to 1 mile
A single residence off the end of Fink Road	0.3 mile
Two residences at Sullivan Road	0.1 mile
San Luis Segment	
Two residences at Butts Road	0.1 and 0.9 mile
A group of residences and the San Joaquin Valley National Cemetery at McCabe Road	0.1 mile
Recreation areas located at San Luis Reservoir, O'Neill Forebay, and Los Banos Creek Reservoir, including campgrounds and picnic areas	0.2 mile
A group of residences and a commercial campground east of the Los Banos Substation	0.1 mile
South Segment	
A group of homes near Billy Wright Road	0.06 mile
A single residence near Canyon Road	0.1 mile
A group of homes off Arburua Road	0.1 mile

Total construction time at each transmission structure location would be approximately 1-2 weeks spread over a period of approximately 18 months. Construction of all segments of the Proposed Project could result in an exceedance of air quality or emissions standards and could cause sensitive receptors to be exposed temporarily to construction emissions. Therefore, Project-generated emissions of criteria air pollutants and ozone precursors could expose sensitive receptors to substantial pollutant concentrations. This impact would be significant under CEQA.

Mitigation Measures for Impact AQ-2

MM AQ-1 Reduce or offset construction equipment emissions.

Level of Significance after Mitigation

Implementation of Mitigation Measure AQ-1 would require development of a construction schedule and quantification of construction activity emissions. Mitigation Measure AQ-1 requires Western to reduce or offset construction emissions to demonstrate that the overall emission levels are below the emission thresholds listed in Table 4.3-1. Therefore, the Proposed Project would not expose sensitive receptors identified in Table 4.3-3 to detrimental pollution concentrations. Under CEQA, this impact would be reduced to a less than significant level. This impact would be the same in the North, Central, San Luis, and South segments.

<p>Impact AQ-3 Contribute to a collective or combined air quality effect, including existing and foreseeable other projects that leads to violation of air quality standards, even if the individual effect of the project/activity is relatively minor compared with other sources.</p>
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As shown in Table 3.3-2, the San Joaquin Valley Air Basin is already in nonattainment with several state and federal air quality standards. To assess the project contribution to the collective or combined effect of

total emissions in the air basin, the local air districts recommend comparing emissions from construction of the Proposed Project against applicable significance thresholds shown in Table 4.3-1. The Proposed Project has the potential to exceed applicable emissions thresholds, which would constitute a significant impact.

Mitigation Measures for Impact AQ-3

MM AQ-1 Reduce or offset construction equipment emissions.

Level of Significance after Mitigation

Mitigation Measure AQ-1 requires Western to reduce or offset construction emissions to demonstrate that the overall emission levels are below the emission thresholds listed in Table 4.3-1. Reducing Project emissions to levels below these thresholds ensures that the Project would not contribute to a collective or combined air quality effect that causes a violation of any air quality standard. Under CEQA, this impact would be reduced to a less than significant level. This impact would be the same in the North, Central, San Luis, and South segments.

Impact AQ-4 Produce air contaminants above the level of significant cancer risk, if any. The State of California defines the level of significant cancer risk as more than 10 confirmed cases per million individuals exposed.

The principal Hazardous Air Pollutant (HAP) of concern for the Proposed Project is diesel particulate matter associated with use of diesel-fueled construction equipment. The dose to which sensitive receptors are exposed (a function of concentration and duration of exposure) is the primary factor used to determine health risk (i.e., potential exposure to HAP emission levels that exceed applicable standards). Construction of the Proposed Project would cause emissions over a limited duration of less than 2 years, and the diesel particulate matter emissions would cease at the completion of construction. No single location near the corridor of about 95 miles of new transmission lines would be exposed to construction-related contaminants for an excessive duration. The total construction time at each transmission structure location would be limited to approximately 1–2 weeks. Diesel particulate matter is highly dispersive, and studies have shown measured concentrations of vehicle-related pollutants, including ultra-fine particles, decrease dramatically within approximately 300 feet of the source (Zhu et al., 2002). Therefore, the direct or indirect exposure of sensitive receptors to construction-related HAP emissions and pollutant concentrations would be negligible. Under CEQA, this impact would be less than significant. This impact would be the same in the North, Central, San Luis, and South segments.

Impact AQ-5 Conflict with adopted environmental plans and goals as provided in the State Implementation Plan (SIP) or regional air quality plan.

Project participants would comply with applicable federal, state, and local rules and regulations regarding air quality. Because all machinery and vehicles used during construction of the Proposed Project would be in compliance with the emissions control requirements of the local air district and California Air Resources Board, construction of the Proposed Project would not conflict with the SIP or the SJVAPCD's air quality plans. Under CEQA, this impact would be less than significant. This impact would be the same in the North, Central, San Luis, and South segments.

Impact AQ-6 Emissions exceed conformity de minimis thresholds

Table 4.3-1 shows the EPA *de minimis* thresholds for General Conformity and the local air pollution control district emissions thresholds for construction projects.

Emissions of NO_x and PM₁₀, but not PM_{2.5} or VOC, during construction could exceed SJVAPCD significance thresholds and EPA's General Conformity applicability rate for NO_x, as shown in Table 4.3-2. Western has adopted a proactive stance by implementing Project EPMs that mirror measures recommended by the air district. While the implementation of Project EPMs and construction standards would reduce NO_x, PM₁₀, PM_{2.5}, and VOC emissions, emissions of NO_x and PM₁₀ could still exceed SJVAPCD threshold values depending on overlapping construction activities or phases.

Western anticipates that overlapping construction activities or phases could be managed to ensure that the NO_x, PM₁₀, PM_{2.5}, and VOC emissions would be less than the BAAQMD and SJVAPCD significance thresholds and EPA's General Conformity applicability rates. However, quantification of actual construction emissions will depend on final engineering that is not available at this time. Therefore, until quantification is available, this impact is considered significant under CEQA.

Mitigation Measures for Impact AQ-6

MM AQ-1 Reduce or offset construction equipment emissions.

Level of Significance after Mitigation

Implementation of Mitigation Measure AQ-1 above would require detailed engineering of the Project, development of a construction schedule, and quantification of construction activity emissions. Mitigation Measure AQ-1 requires Western to reduce or offset construction emissions to demonstrate that the overall emission levels are below the emission thresholds listed in Table 4.3-1. With the mitigation, the impact under CEQA would be less than significant. This impact would be the same in the North, Central, San Luis, and South segments.

Impact AQ-7 Would the Project generate greenhouse gas emissions (GHG), either directly or indirectly, that may have a substantial impact on the environment?
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Impact AQ-8 Would the Project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs?
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With regard to Impact AQ-7 and Impact AQ-8, the Proposed Project would improve Western's electric transmission network and improve the efficiency of electrical transmission. Project activities would have no measurable effect on global climate change nor would Project facilities be affected in a measurable way by global climate change. Climate change could result in extreme environmental conditions that impact Western's electric transmission network. The Proposed Project would be expected to improve the transmission corridor to increase reliability of service and to maintain integrity of the transmission system. As such, the Project would be likely to improve the resilience of basic infrastructure during extreme weather. This would improve the ability of the infrastructure to provide electric transmission service while withstanding climate-related impacts. Reducing the potential for transmission system service interruptions should improve public health and safety by avoiding catastrophic service failures or power outages as a result of extreme weather. During the operation and maintenance phase of the Proposed Project electrical switchgear included with the Project would be gas-insulated and subject to applicable GHG regulations for reducing SF₆ emissions. O&M activities would ensure that the potential

for SF₆ leaks is minimized according to a leak reduction standard that is consistent with the AB 32 Scoping Plan, including California ARB SF₆ regulations (17 CCR 95350 to 95359). The Proposed Project would not conflict with any plan, policy or regulation related to reduction of GHG emissions. Under CEQA, this impact would be less than significant.

Similarly, though GHG emissions from project construction would be additive to GHG emissions from other activities in the project area, they would be limited in duration and magnitude. Construction emissions would be limited to the temporary duration of the construction, and annual operational emissions would not be expected to exceed 1,000 MTCO₂e (assumptions and additional details are presented in Appendix I, Air Quality Emission Calculations). Table 4.3-4 shows the estimated GHG emissions during construction based on the construction approach and schedule presented in Section 2.3.1.

Table 4.3-4. Estimated Construction-Phase GHG Emissions (CO₂e metric tons)

Calendar Year	CO₂e
Year 1 (2018)	5,385.1
Year 2 (2019)	5,353.6
Year 3 (2020)	2,130.9
Total for Full Duration of Construction	12,869.6

Source: Appendix I.

To facilitate compliance of federal actions with the provisions of NEPA, the CEQ has developed draft guidance on when and how to consider the effects of GHG (December 2014). This analysis is a cumulative impact assessment because GHG emissions contribute, by their nature on a cumulative basis, to the adverse environmental impacts of global climate change. Construction emissions of GHG from the proposed action would be non-recurring over the service life of the transmission system. When averaged over the service life of the Project, GHG from project construction would be below a level (25,000 MTCO₂e annually) that warrants quantitative disclosure. Cumulative impacts of the Proposed Project coupled with other area projects would be considered unavoidable short-term impacts. However, the Project would not generate substantial levels of GHG emissions during construction or over the long-term. These limited levels of Project GHG emissions would not be cumulatively considerable under CEQA.

These impacts would be the same in the North, Central, San Luis, and South segments.

4.3.4 Corridor Alternatives

4.3.4.1 Central Segment

Patterson Pass Road Alternative

This alternative has nine more miles of new access roads and the same number of support structures as the Proposed Project. Impacts to air quality from this alternative would be similar to that of the Proposed Project in type and context but greater in the duration and intensity due to greater number of support structures and length of new access roads. CEQA impact significance determinations are the same as those described for the Proposed Project.

4.3.4.2 San Luis Segment

Butts Road Alternative

This alternative corridor would be 0.5 miles longer than the Proposed Project, would have two more support structures, and would increase needed new access roads by 2 miles. Impacts to air quality from this alternative would be similar to that of the Proposed Project in type and context but greater in the duration and intensity due to greater number of support structures and length of new access roads. CEQA impact significance determinations are the same as those described for the Proposed Project.

West of Cemetery Alternative

This alternative corridor would be 1.2 miles longer than the Proposed Project, would have six more support structures, and would increase needed new access roads by 9 miles. Impacts to air quality from this alternative would be similar to that of the Proposed Project in type and context, but greater in duration and intensity due to the greater number of support structures and length of new access roads. CEQA impact significance determinations are the same as those described for the Proposed Project.

West of O'Neill Forebay 70-kV Alternative

This alternative is the same length, has the same length of new access roads, and has the same number of support structures as the Proposed Project, and therefore would have essentially the same impacts to air quality during construction and O&M as the Proposed Project. CEQA impact significance determinations are the same as those described for the Proposed Project.

4.3.4.3 South Segment

San Luis to Dos Amigos Alternative

This alternative has the same length of new access roads and same number of support structures as the Proposed Project, and therefore, would have essentially the same impact to air quality during construction and O&M activities. CEQA impact significance determinations are the same as those described for the Proposed Project.

Billy Wright Road Alternative

This alternative corridor would be 1.5 miles longer than the Proposed Project, would have eight more support structures, and would need 3.0 miles of additional new access roads. Impacts to air quality from this alternative would be similar to that of the Proposed Project in type and context, but greater in duration and intensity due to greater number of support structures and length of new access roads. CEQA impact significance determinations are the same as those described for the Proposed Project.

4.3.5 No Action/No Project

Under the No Action/No Project Alternative, Western would not construct the SLTP. No new facilities would be built and no new emissions would occur; therefore, there would be no impacts to air quality.

4.4 Biological Resources

4.4.1 Thresholds of Significance

The Proposed Project and alternatives would have significant effects on biological resources if any activity associated with their construction, operation, or maintenance would:

- Adversely affect a listed endangered, threatened or proposed species or designated critical habitat, or a non-listed special-status plant or animal species either directly or through habitat loss or modification (Impact BIO-1);
- Adversely and substantially affect native plant communities, including riparian areas or other sensitive communities (Impact BIO-2);
- Substantially interfere with the movement or migration of any native resident or migratory fish or wildlife species, or impede the use of native wildlife nursery sites for more than one reproductive season (Impact BIO-3);
- Have substantial adverse effects on wetlands and Waters of the U.S. and state (Impact BIO-4);
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance (Impact BIO-5); or
- Conflict with the provisions of an adopted local, regional, state, or federal habitat conservation plan (Impact BIO-6).

4.4.2 Environmental Protection Measures

- All Western and contract crews will complete biological awareness training to ensure they are familiar with sensitive biological resources and the associated EPMs and mitigation measures. All supervisors and field personnel will have on file a signed agreement that they have completed the training, and understood and agreed to the terms. EPMs and applicable mitigation measures will be written into the contract for construction and O&M work, and contractors will be held responsible for compliance.
- Vehicle traffic will be restricted to designated access routes and the immediate vicinity of construction and O&M sites. Vehicle speeds will not exceed 15 mph on nonpublic access and maintenance roads and 10 mph on unimproved access routes. Vehicles and equipment will be parked on pavement, existing roads, and previously disturbed areas, to the extent feasible.
- No pets or firearms will be permitted at project sites.
- At the end of each work day, construction and O&M workers will leave work areas and adjacent habitats to minimize disturbance to actively foraging animals, and remove food-related trash from the work site in closed containers for disposal. Workers will not deliberately or inadvertently feed wildlife.
- Nighttime construction and O&M activities will be minimized to emergency situations. If nighttime construction and O&M work is required, lights will be directed to the minimum area needed to illuminate project work areas. If nighttime work is required, a speed limit of 10 mph will be enforced on all nonpublic access roads.
- Mortalities or injuries to any wildlife that occur as a result of project- or maintenance-related actions will be reported immediately to the Western Natural Resources Department or other designated point of contact, who will instruct construction and O&M personnel on the appropriate action, and who will contact the appropriate agency if the species is listed. The phone number for the Western Natural

Resources Department or designated point of contact will be provided to the construction contractors, maintenance supervisors and to the appropriate agencies.

- Caves, mine tunnels, and rock outcrops will never be entered, climbed upon, or otherwise disturbed.
- If a pesticide label stipulates a buffer zone width for protection of natural resources that differs from that specified in a project mitigation measure or EPM, the buffer zone width that offers the greatest protection will be applied.
- At completion of work and at the request of the land owner/manager, all work areas except access roads will be scarified or left in a condition that will facilitate natural or appropriate vegetation, provide for proper drainage, and prevent erosion.
- Prior to any application of herbicide, Western will query the California Department of Pesticide Regulation PRESCRIBE database, entering location information by county, township, range, and section, entering both the commercial name and the formulation of the desired pesticide, and will follow all use limitations provided to ensure compliance with applicable pesticide standards. This database is currently located at <http://www.cdpr.ca.gov/docs/endspec/prescint.htm>. The measures generated by the PRESCRIBE database will supersede those in the project EPMs where they are different.
- Seed mixtures applied for erosion control and restoration will be certified as free of noxious weed seed, and will be composed of native species or sterile nonnative species.
- Equipment will be washed prior to entering sensitive areas within the project area to control noxious weeds. The rinse water will be disposed of through the sanitary sewage system or other appropriate disposal method that minimizes the spread of noxious weeds.
- Measures described in the Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006 (Avian Power Line Interaction Committee 2006 or more current version) and Reducing Avian Collisions with Power Lines: The State of the Art in 2012 (Avian Power Line Interaction Committee 2012 or more current version) will be implemented during O&M activities to minimize bird mortality and injury. At such time when Western finalizes an Avian Protection Plan, Western will adhere to the guidance in that document.
- Construction and O&M excavations greater than 3 feet deep will be fenced, covered, or filled at the end of each working day, or have escape ramps provided to prevent the entrapment of wildlife. Trenches and holes will be inspected for entrapped wildlife before being filled. Any entrapped animals will be allowed to escape voluntarily before construction and O&M activities resume, or they may be removed by qualified personnel, with an appropriate handling permit if necessary.
- A hazardous-spill plan will be developed prior to construction and will remain in effect for all O&M activities. The plan will describe what actions will be taken in the event of a spill of toxic or hazardous materials. The plan will incorporate preventive measures to be implemented for vehicle and equipment staging, cleaning, maintenance, and refueling, and for containment management and storage of hazardous materials, including fuel. In the event of a contaminant spill, work at the site will immediately cease until the contractor has contained and mitigated the spill. The contractor will immediately prevent further contamination, notify appropriate authorities, notify Western's regional environmental manager, and will mitigate damage as appropriate. Adequate spill containment materials, such as oil diaper mats and hydrocarbon cleanup kits, will be available on site at all times, as will containers for storage, transportation, and disposal of contaminated absorbent materials.
- Erosion control measures will be implemented to prevent loss of soil. Construction will be in conformance with Western's Integrated Vegetation Management Environmental Guidance Manual.

- On completion of the work, all work areas except permanent access roads will be returned to preconstruction conditions unless otherwise specified by the land owner/manager.
- Construction and operations will be conducted in a manner that prevents unnecessary destruction, scarring, or defacing of the natural surroundings and to preserve the natural landscape to the extent practicable.
- No permanent discoloring agents will be applied to rocks or vegetation to indicate limits of survey.
- All vehicles and equipment will be equipped with required exhaust noise abatement suppression devices.
- Runoff from the construction and O&M sites will be controlled and meet RWQCB stormwater requirements and the conditions of a construction stormwater discharge permit. A stormwater pollution prevention plan will be prepared and implemented.
- All contaminated discharge water created by construction and O&M activities (e.g., concrete washout, pumping for work area isolation, vehicle wash water, drilling fluids) will be contained and disposed of in accordance with applicable Federal, State, and local regulations.
- All fill or rip-rap placed within a stream or river channel will be limited to the minimum area required for access or protection of existing Western facilities.
- All equipment will be stored, fueled, and maintained in vehicle staging areas 300 feet or the maximum feasible distance from any aquatic habitat (vernal pool, vernal pool grassland, seasonal wetland, seep, spring, pond, lake, river, stream, or marsh) and no closer than 200 feet unless a bermed (no ground disturbance) and lined refueling area is constructed and hazardous-material absorbent pads are available in the event of a spill. Vehicles and construction equipment will be inspected daily for fluid leaks before leaving staging areas during construction and O&M activities. Fluid leaks will be repaired before equipment is moved from staging areas.
- All instream work, such as culvert replacement or installation, bank recontouring, or placement of bank protection below the high-water line, will be conducted during no-flow or low-flow conditions and in a manner to avoid impacts to water flow, and will be restricted to the minimum area necessary for completion of the work.
- All equipment used below the ordinary high-water mark will be free of exterior contamination.
- Excavated material or other construction materials will not be stockpiled or deposited near or on stream banks, lake shorelines, or other watercourse perimeters.
- Non-biodegradable debris will be collected and removed from the easement daily and taken to a disposal facility. Slash and other biodegradable debris will be left in place or disposed of.
- All soil excavated for structure foundations will be backfilled and tamped around the foundations, and used to provide positive drainage around the structure foundations. Excess soil will be removed from the site and disposed of appropriately. Areas around structure footings will be reseeded with native plants.
- Wherever feasible, new structures and access roads will be sited out of floodplains. Bridges will be used at new stream crossings wherever feasible. If avoidance is infeasible, Western will consult with USACE and obtain permits as required.
- If wet areas cannot be avoided, Western will use vehicles, ground mats, and equipment that minimize ground impacts.

- Construction vehicle movement outside of the easement will be restricted (to the extent feasible) to approved access or public roads.
- Where feasible, all construction activities will be rerouted around wet areas while ensuring that the route does not cross sensitive resource areas.

4.4.3 Proposed Project

Potential impacts to biological resources were analyzed for all phases of the Proposed Project, including construction, operation and maintenance (O&M), and for all alternatives. Some portions of the Project area could not be surveyed due to right-of-entry restrictions; in these areas, vegetation and habitats were interpreted based on aerial imagery or long-distance views through binoculars (see Appendix C).

Mitigation measures identified in this EIS/EIR would effectively reduce or avoid impacts in accordance with NEPA and CEQA. However, Western would also have discussions with the appropriate resource agencies regarding impacts to biological resources under each agency's purview, in order to obtain all required permits. Measures resulting from these discussions would be in addition to, and may supersede mitigation identified herein.

Impact BIO-1 Adversely affect a listed endangered, threatened or proposed species or designated critical habitat, or a non-listed special-status plant or animal species either directly or through habitat loss or modification.

The following summarizes the special-status plant and animal species documented in each Project segment in the CNDDDB and during Project surveys; however, additional populations may exist that have not been identified. Species in *italics* were detected during Project surveys in spring 2014 and 2015. Designated critical habitat is also identified. Additional listed and other special-status species have the potential to occur, as described in Tables 3.4-1 and 3.4-2 in Section 3.4 (Affected Environment – Biological Resources). Refer to the Biological Resources Technical Report (Appendix C) for a detailed discussion of special-status species.

North Segment

- Round-leaved filaree (CRPR 1B)
- Diamond-petaled California poppy (CRPR 1B)
- Caper-fruited tropidocarpum (CRPR 1B)
- Delta smelt critical habitat (350.6 acres in corridor; 5914.4 acres in Study Area)
- Alameda whipsnake (FT, ST)
- Pacific pond turtle (SSC)
- California red-legged frog (FT, SSC)
- California red-legged frog designated critical habitat (12.2 acres in corridor; 1038.7 acres in Study Area)
- *Tricolored blackbird* (SSC)
- *Burrowing owl* (SSC)
- *Loggerhead shrike* (SSC)
- San Joaquin kit fox (FE, ST)

Central Segment

- Big tarplant (CRPR 1B)
- *Round-leaved filaree* (CRPR 1B)
- *Hogwallow starfish* (CRPR 4)
- Lemmon's jewelflower (CRPR 1B)
- Diamond-petaled California poppy (CRPR 1B)
- *Elderberry plants* (host plant for Valley elderberry longhorn beetle [FT])
- California red-legged frog (FT, SSC)
- California red-legged frog designated critical habitat (209.7 acres in corridor; 5086.9 acres in Study Area)
- Alameda whipsnake (FT, ST)
- Coast horned lizard (SSC)
- *Pacific pond turtle* (SSC)
- Swainson's hawk (ST)
- Burrowing owl (SSC)
- Least bell's vireo (FE, SE)
- *San Joaquin kit fox* (FE, ST)
- American badger (SSC)

San Luis Segment

- Blunt-nosed leopard lizard (FE, SE, CFP)
- *Swainson's hawk* (ST)
- Northern harrier (SSC)
- Tricolored blackbird (SSC)
- *San Joaquin kit fox* (FE, ST)

South Segment

- Blunt-nosed leopard lizard (FE, SE, CFP)
- Alameda whipsnake (FT, ST)
- Golden eagle (BGEPA, CFP)
- Burrowing owl (SSC)
- *San Joaquin kit fox* (FE, ST)

Plants

Direct effects to special-status plants during construction would be adverse and could include removal of individual plants or populations and removal of habitat including the seed bank. While loss of special-status plants would be site-specific, the context of this impact would be regional due to the limited distribution and populations of special-status species. Direct impacts would be short-term and minor with implementation of compensatory mitigation. Indirect adverse effects could occur from dust, erosion, and degradation of habitat and competition from spread of invasive weeds. The context of this impact is regional, and while some indirect effects are short-term and minor in intensity, the spread of invasive weeds would be a long-term impact of moderate intensity.

O&M impacts to special-status plants would primarily occur from vehicle use of access roads to inspect lines, routine grading and maintenance of roads within the existing roadbed, and from localized construction activities associated with repair or replacement of structures or conductors (see Appendix D, Operation and Maintenance Plan, for a full description of O&M activities). Most O&M impacts would be indirect (dust, weeds) although localized construction activities could directly impact special-status plant populations. O&M impacts to special-status plants would be much reduced in context, duration, and intensity compared to the construction phase. Routine maintenance jobs are typically short in duration, and ground disturbance is typically minor to negligible.

Western's implementation of a variety of EPMs during construction and O&M as part of the project would avoid or minimize impacts to special-status plants and minimize alteration of habitat. All construction personnel would receive training on federal and state laws protecting plants and wildlife, including prohibitions on collection and removal. Vehicles would be restricted to designated access routes and work areas, and temporary work areas would be restored following construction. Equipment would be washed prior to entering sensitive areas to avoid introducing new weed seeds. In addition,

seed mixtures applied for erosion control and restoration will be certified as free of noxious weed seed, and will be composed of native species or sterile nonnative species. Where appropriate, herbicides would be used to control weeds, but use would conform with standards in the California Department of Pesticide Regulation PRESCRIBE database to avoid adverse effects to non-target species and habitats. Nonetheless, under CEQA the direct and indirect impacts to special-status plants and habitats would be significant absent mitigation in the North, Central, San Luis, and South segments.

Wildlife

Direct effects to special-status wildlife would be adverse and could include physical damage to or removal of occupied or potential habitats (including designated critical habitat), construction-related erosion or runoff into aquatic habitats, injury or mortality of individuals, disturbance through human presence and construction noise and vibration, and collapse of burrows. Construction in and around agricultural lands, grasslands, and canals could result in the loss of individual western burrowing owls or giant garter snakes; and impacts to vernal pools and seasonal wetlands could result in take of listed fairy shrimp. Direct effects to birds could also include disturbance to nesting birds or nest destruction. The primary effects to bats would be direct effects associated with disturbance at roost sites through human presence and construction noise and vibration. Direct impacts would be short-term and moderate in intensity. The context of direct impacts would be regional due to the limited distribution and populations of special-status species.

Indirect adverse effects could include degradation of habitats through introduction of trash, introduction or spread of non-native plants or predators, spread of disease, spill of hazardous materials, and increased susceptibility to wild fire. The context of indirect impacts is regional, and would be long-term and of moderate intensity.

O&M impacts to special-status wildlife would primarily occur from vehicle use of access roads to inspect lines, routine grading and maintenance of roads within the existing roadbed, and from localized construction activities associated with repair or replacement of structures or conductors. Impacts to special-status wildlife would generally be of similar types as those described for construction, but would be much reduced in context, duration, and intensity. Routine maintenance jobs are typically short in duration, and ground disturbance is minor to negligible.

Western's implementation of a variety of EPMs during construction and O&M as part of the project would avoid or minimize impacts to special-status wildlife and minimize alteration of habitat (including designated critical habitat). All construction personnel would receive training on federal and state laws protecting plants and wildlife, including prohibitions on collection and removal. Vehicles would be restricted to designated access routes and work areas, and trash would be removed each day to avoid attracting predators. Nighttime construction would occur only under emergency circumstances. Temporary work areas would be restored following construction. The transmission facilities would be constructed to current Avian Power Line Interaction Committee standards to minimize avian electrocutions and collisions during operation. Excavations during construction and operation would be managed to avoid wildlife entrapment. Nonetheless, under CEQA the direct and indirect impacts to special-status wildlife and habitats would be significant absent mitigation in the North, Central, San Luis, and South segments.

Mitigation Measures for Impact BIO-1

MM BIO-1 **Conduct surveys for special-status plants and sensitive habitats.** Prior to construction, an agency-approved botanist will survey Project areas during appropriate blooming periods for listed and special-status plant species and sensitive habitats. Special-status vegetation communities and species will be reported to the USFWS and/or CDFW.

MM BIO-2 **Avoidance and minimization measures for special-status plants and vegetation communities.** The following measures will be implemented during construction and O&M activities for special-status plants and vegetation communities. Special-status plants include federal and state listed plant species (large-flowered fiddleneck, Hoover's spurge, Delta button-celery, Contra Costa goldfields, Mason's lilaeopsis, Hartweg's golden sunburst, and Greene's tuctoria), and all CRPR special-status plants.

During construction activities:

- From March 1 to August 31, vehicle access will be permitted only on well-established roads until an agency-approved botanist has surveyed the site.
- Ground-disturbing activities will require a bloom season survey by an agency-approved biologist to flag any existing plant populations. Ground disturbance will be prohibited within the flagged boundary unless further consultation with USFWS or coordination with CDFW (as appropriate) is completed. Flagging or other field markers such as temporary fence posts, or other markers that will last for the construction season, will be placed in the prohibited area to ensure that no disturbance occurs at that location. Populations of special-status plants will also be mapped and located in the field using a GPS so that they are clearly identified at all times of the year and construction workers can easily identify areas to be avoided. The area where special-status plants are being preserved will be avoided by workers doing construction activities at all times of the year. After construction is completed the flagging and markers can be removed.
- During Project construction, a biological monitor will be present when work occurs within 100 feet of a flagged listed plant population.
- Standard erosion- and sediment-control measures will be installed for all ground-disturbing activities to prevent impacts to special-status plants and vegetation communities.
- Where impacts to special-status plants cannot be avoided, and mitigation cannot be achieved through the purchase of credits at a mitigation or conservation bank, the top 4 inches of topsoil will be removed and salvaged and applied to an appropriate on-site or off-site restoration area. When this topsoil is replaced, compaction will be minimized. Soil will not be stockpiled for more than one year to maintain seed viability.
- Western will comply with conditions of any affected existing conservation easement, and will avoid and minimize impacts within conservation easements to the extent feasible.

During O&M activities:

- From March 1 to August 31, vehicle access will be permitted only on well-established roads until an agency-approved biologist has surveyed the site.

- If vegetation management activities are proposed between March 1 and August 31, an agency-approved biologist will mark special-status plant populations, including a 50-foot (15-meter) buffer zone, prior to construction and O&M activities. Within 100 feet (30.5 meters) of the marked area, the following work area limits will be provided: (1) only manual clearing of vegetation will be allowed within 50 feet of the edge of the flagged area, (2) mechanical treatment of all kinds (including mowers, tractors, chippers, dozers) will be prohibited, and (3) herbicide use will be prohibited at all times with the exception of direct application to target vegetation.
- Workers will refer to maps that show the location of mapped populations of special-status plants so that these areas can be avoided.
- Standard erosion- and sediment-control measures will be installed for all ground-disturbing activities to prevent impacts to plants.
- Where impacts to special-status plants cannot be avoided, and mitigation cannot be achieved through the purchase of credits at a mitigation or conservation bank, the top 4 inches of topsoil will be removed and salvaged and applied to an appropriate on-site or off-site restoration area. When this topsoil is replaced, compaction will be minimized. Soil will not be stockpiled for more than one year to maintain seed viability.
- Western will comply with conditions of any affected existing conservation easement, and will avoid impacts within conservation easements to the extent feasible.

MM BIO-3

Provide compensatory mitigation for impacts to special-status plants. Western will purchase credits in an appropriate mitigation bank or habitat conservation bank for the plants species to be impacted as appropriate. If a mitigation bank is not available Western will contribute in-lieu fees to a mitigation bank or habitat conservation bank that can provide appropriate mitigation for the special-status plant species affected. Western will work with the appropriate resource agency (USFWS and/or CDFW) to ensure adequate compensation. Mitigation ratios will be sufficient to achieve the performance criterion of no net loss of the affected plant species.

If mitigation cannot be achieved by purchase of credits in a mitigation or conservation or by in-lieu fees, then Western will prepare a mitigation plan that describes the compensatory mitigation measures that will be implemented for special-status plants. The mitigation plan will be submitted to the USFWS for approval for federal listed plants and to CDFW for state-listed and CRPR plants. The mitigation plan will include the mitigation measures, which are adopted from the *CNPS Policy on Mitigation Guidelines Regarding Impacts to Rare, Threatened and Endangered Plants* (CNPS, 1998); or equally effective alternative measures.

MM BIO-4

Provide compensatory mitigation for impacts to federally listed branchiopod habitat. If effects to branchiopod habitats cannot be avoided, Western will compensate for effects through one of the following: (a) affected pools will be restored on site after construction is complete, (b) credits will be acquired from an agency-approved conservation bank, (c) funds will be deposited into an approved in-lieu fee program, or (d) a conservation easement will be purchased. Compensation amounts will be approved by USFWS.

For onsite creation or restoration, Western will develop and implement a mitigation, monitoring, and reporting plan with input from regulatory agencies that outlines performance standards and success criteria for ensuring long-term success of mitigation.

If it is necessary for cysts to be salvaged to restore affected pools and with concurrence from the USFWS, an agency-approved biologist will salvage soils from local sites that are known to support vernal pool branchiopods at least 2 weeks before the onset of construction, or during the preceding dry season if pools are anticipated to hold water when construction begins. The salvaged soil samples will be stored and used to inoculate restored pools.

MM BIO-5 **Avoidance and minimization measures for valley elderberry longhorn beetle.** The following measures will be implemented during construction and O&M activities to protect valley elderberry longhorn beetle.

During construction activities:

- If the Project may affect valley elderberry longhorn beetle, take authorization/permits will be obtained from the USFWS. Upon completion of the authorization/permit process, Western will implement the terms and conditions of the authorizations for this beetle, which could include but may not be limited to the following:
 - A 100-foot (30.5-meter) no-disturbance buffer fence will be installed and maintained around the perimeter of elderberry shrubs. No grading or any other ground-disturbing activities will be conducted within the fenced area without prior verification that the requirements of the USFWS have been satisfied including the issuance of any necessary permits or authorizations.
 - Contractors will be briefed on the status of the beetle, the need to protect its elderberry host plant, the need to stay out of this 100-foot buffer, and the possible penalties for not complying with these requirements.
 - Signs will be erected every 50 feet (15 meters) along the edge of avoidance areas with the following statements: “This area is habitat of the valley elderberry longhorn beetle, a threatened species, and must not be disturbed. This species is protected by the Endangered Species Act of 1973, as amended. Violators are subject to prosecution, fines, and imprisonment.” The signs will be clearly readable from a distance of 20 feet (6 meters), and will be maintained for the duration of construction.
 - Biological monitoring will be provided by an agency-approved biologist during construction in all areas within 100 feet (30.5 meters) of elderberry plants.

During O&M activities:

- Prior to initiating vegetation clearance with elderberry plants present, qualified personnel will clearly flag or fence each elderberry plant with a stem measuring 1 inch (2.54 centimeters) or greater in diameter at ground level. If an elderberry plant meeting this criterion is present:
 - A minimum buffer zone of 20 feet (6 meters) outside of the dripline of each elderberry plant will be provided during all routine O&M activities within which all O&M activities except manual clearing will be prohibited.
 - No insecticides, herbicides, fertilizers, or other chemicals will be used within 100 feet (30.5 meters) of an elderberry plant, except direct application to target vegetation.

- Trimming, rather than removal of shrubs, will be used where feasible. Directional felling of trees and manual-cutting trees prior to removal will be used to minimize impacts to elderberries.
- Replacement of existing conductor or installation of additional lines will be performed by pulling the line from tower to tower without touching the vegetation in areas where elderberry plants are present.

MM BIO-6 **Provide compensatory mitigation for impacts to elderberry plants.** If complete avoidance (100 feet) of elderberry plants is not feasible during construction, a mitigation plan will be developed in accordance with the most current USFWS mitigation guidelines (currently USFWS, 1999) that will include provision for compensatory mitigation. The mitigation plan will include, but may not be limited to, relocating elderberry shrubs, planting elderberry shrubs, establishing success criteria, monitoring relocated and planted elderberry shrubs to ensure success, and an adaptive management plan in the event that mitigation is not successful.

MM BIO-7 **Avoidance and minimization measures for Alameda whipsnake.** Western will minimize or avoid effects to Alameda whipsnake and its habitats by implementing the following measures.

- If suitable Alameda whipsnake habitat will be impacted by the proposed project, Western will consult with the USFWS and coordinate with CDFW. Applicable take authorization/permits will be obtained, as necessary. Upon completion of the authorization/permit process, Western will implement the terms and conditions of the authorizations, which could include but may not be limited to the following:
 - If habitat for Alameda whipsnake will be impacted by project activities, Western will develop and implement a protection and monitoring plan for Alameda whipsnake that will be approved by USFWS and coordinated with CDFW. Measures in this plan will include, but may not be limited to, a procedure for conducting preconstruction surveys and/or trapping surveys before the onset of initial ground-disturbing activities in areas with high-quality habitat that cannot be avoided, surveying before construction and/or restoration begins each day that these activities will occur, and direct monitoring by an agency-approved biologist of the occupied or potentially occupied grassland/scrub/mosaic habitats in the Project area that will be directly affected by Project construction.

MM BIO-8 **Avoidance and minimization measures for blunt-nosed leopard lizard.** To protect blunt-nosed leopard lizard, Western will implement the following for both construction and O&M activities.

- An agency-approved (USFWS and CDFW) biologist will conduct blunt-nosed leopard lizard surveys for each ground disturbance site in blunt-nosed leopard lizard habitat per the *2004 Approved Survey Methodology for the Blunt-nosed Leopard Lizard* (CDFG, 2004) or currently approved methodology.
- If blunt-nosed leopard lizards are not detected during surveys, a flashing barrier or other short-term or longer-term fencing plan approved by CDFW will be installed when feasible and necessary around the work area to prevent blunt-nosed leopard lizards from entering the work area. Fencing options may be shorter term (temporary for just a few hours) or longer term (days or weeks) and may include but would not be

limited to a 36 inches (0.9 meters) tall barrier, buried 6 inches (15 centimeters) deep, and reinforced with rebar or T-posts, and may include escape ramps of silt-fencing material, wood, or soil to allow any undetected blunt-nosed leopard lizard to exit the site. Fencing plans and types may be altered based on length of time the fence is to remain in place, terrain, and Project needs. Fencing will be removed upon Project completion.

- If blunt-nosed leopard lizards are subsequently found within the fenced work area, a section of fence may be removed so that the lizard may leave the exclusion zone. The agency-approved biologist will monitor the location of the blunt-nosed leopard lizard to ensure that it has moved outside of the work area. The fencing will be immediately replaced to exclude the lizard from the construction area. When all observed blunt-nosed leopard lizards have exited the site, additional surveys will be implemented during appropriate conditions for detection for at least five survey days before construction begins to ensure that no more blunt-nosed leopard lizards inhabit the work-area exclusion zone.
- If blunt-nosed leopard lizards are detected during surveys, any active burrow within a 200-foot radius of activity sites will be flagged and marked with a burrow number prior to construction or O&M activities. Flagged, 50-foot (15-meter) exclusion zones will be established around any potentially active burrow. Construction activities, with the exception of essential vehicle operation on existing roads and foot travel, will be prohibited within this exclusion zone. A flashing barrier or appropriate fencing approved by CDFW will be established between burrow(s) and work sites. The barrier or fencing will be established at least 180 degrees around the burrow site and will flare out at the ends to direct lizards away from the activity sites. The barrier or fencing will not enclose an active burrow site.
- An agency-approved biological monitor will monitor all vehicular traffic within 200 feet (61 meters) of active burrows by escorting all vehicles through this zone on foot. The monitor will walk in front of the vehicle to ensure that no blunt-nosed leopard lizards are in the road or path of travel. All personnel vehicles or other vehicles not needed for construction activities will park at least 200 feet (61 meters) from the flagged burrow site and crews will walk into the work area.
- An agency-approved biological monitor will be on site for any activities within suitable blunt-nosed leopard lizard habitat. Prior to construction or O&M activities each day within suitable blunt-nosed leopard lizard habitat, the monitor will conduct a brief ground survey of the site during appropriate conditions for detection to verify that no blunt-nosed leopard lizards are visible within the site. The agency-approved biological monitor will have the authority to stop and/or redirect Project activities in coordination with the project manager and Western's natural resources staff to ensure the protection of blunt-nosed leopard lizards. The agency-approved biological monitor will complete daily reports/logs summarizing activities and environmental compliance.
- Vehicle speed limit of 15 mph (24 kph) will be enforced during construction and O&M activities on all nonpublic Project access roads within blunt-nosed leopard lizard habitat and outside of blunt-nosed leopard lizard flagged areas. Vehicle speeds within 200 feet (61 meters) of flagged blunt-nosed leopard lizard areas (known presence) will be contingent upon the walking speed of biological monitor.

MM BIO-9 **Avoidance and minimization measures for special-status reptiles.** To protect California legless lizard, coast horned lizard, and San Joaquin whipsnake, Western will implement the following measures during construction and ground-disturbing O&M activities.

- A preconstruction survey for California legless lizard, coast horned lizard, and San Joaquin whipsnake will be conducted by an agency-approved biologist in all suitable habitats where tower construction, new access roads, or ground-disturbing O&M activities will affect suitable sandy grassland, scrub, sycamore, or sandy wash habitats. The survey will be conducted within 14 to 30 days of the onset of construction. If individuals of these species are not found, no further action will be required.
- If California legless lizard, coast horned lizard, or San Joaquin whipsnake are found, occupied habitat as well as other suitable habitats will be avoided to the extent feasible. An agency-approved biologist will conduct daily surveys in suitable habitats during construction and O&M activities and will attempt to capture or otherwise move animals out of harm's way when necessary.

MM BIO-10 **Avoidance and minimization measures for giant garter snake.** Western will implement the following measures to protect giant garter snake during construction and O&M activities in Los Banos Creek and adjacent uplands below the dam impounding Los Banos Creek Reservoir.

During construction activities:

- A preactivity survey will be conducted no more than 24 hours before construction activities begin, and an agency-approved biologist will be on site during all activities in potential giant garter snake aquatic and upland habitats. Preactivity surveys will be repeated whenever a lapse in construction activity of two weeks or longer occurs. The biologist will have the authority to stop construction if a giant garter snake is encountered; construction may resume when the snake has been seen to leave the area on its own or the agency-approved biologist confirms the snake will not be harmed. Only personnel with a USFWS 10(a)(1)(A) recovery permit will have the authority to capture and/or relocate giant garter snakes encountered in project area. All sightings and incidental take will be reported to the Western Natural Resources Department, who will report to the USFWS.

During Category A O&M activities (Appendix D):

- Implement EPMs.

During Category B O&M activities (Appendix D):

- With the exception of direct application, use of herbicides within 200 feet (61 meters) of potential giant garter snake habitat will be prohibited at all times.
- Giant garter snake aquatic and upland habitats will be flagged as environmentally sensitive areas by an agency-approved biologist within or adjacent to the disturbance footprint. Only manual vegetation removal will be allowed within the flagged area.
- An agency-approved monitor will be present for O&M activities within the flagged area. Ground-disturbing activities will be avoided within 200 feet (61 meters) from the banks of giant garter snake aquatic habitat. If this were not feasible, O&M activities will be conducted between May 1 and September 30, the giant garter snake active period, and all potentially affected aquatic habitats will be dewatered prior to any ground

disturbance. Dewatered areas will remain dry with no puddled water remaining for at least 15 consecutive days prior to excavation or filling of that habitat. If a site could not be completely dewatered, prey items will be netted or otherwise salvaged if present.

- If it is not feasible to conduct O&M activities between May 1 and September 30, the Sacramento Fish and Wildlife Office will be contacted, and the following actions will be performed:
 - A preactivity survey will be conducted no more than 24 hours before construction activities begin, and an agency-approved biologist will be on site during all activities in potential giant garter snake aquatic and upland habitat. Preactivity surveys will be repeated whenever a lapse in construction activity of two weeks or longer occurs. The biologist will have the authority to stop construction if a giant garter snake is encountered; construction may resume when the snake has been seen to leave the area on its own or the agency-approved biologist confirms the snake will not be harmed. Only personnel with a USFWS 10(a)(1)(A) recovery permit will have the authority to capture and/or relocate giant garter snakes encountered in project area. All sightings and incidental take will be reported to the Western Natural Resources Department, who will report to the USFWS
 - Any temporary fill and debris that might provide habitat for giant garter snakes will be immediately removed and disturbed areas will be restored to pre-Project conditions after completion of O&M activities. Restoration work could include replanting species removed from banks or replanting emergent vegetation in the active channel. Filter fences and mesh will be of a material that will not entrap reptiles and amphibians. Erosion-control blankets will be used as a last resort because of their tendency to biodegrade slowly and trap reptiles and amphibians. No monofilament plastics will be used for erosion control near aquatic features.

During Category C O&M activities (Appendix D):

- Follow all measures listed for Category A and B activities above. Prior to site mobilization, Western will provide notification to appropriate agencies.

MM BIO-11 **Avoidance and minimization measures for western pond turtle.** Western will implement the following measures to protect western pond turtle during construction and O&M activities.

During construction activities:

- A preconstruction survey for western pond turtles will be conducted by an agency-approved biologist in all construction areas identified as potential nesting or dispersal habitat located within 1000 feet (305 meters) of potential aquatic habitat. The survey will be conducted within 48 hours prior to initiation of construction activities. If a western pond turtle is found during preconstruction surveys in an area where it may be affected by construction, an agency-approved biologist will relocate it with permission from CDFW to a site that is a suitable distance from construction activities as necessary. If a nest is found within the construction area, construction will not take place within 100 feet (30.5 meters) of the nest until the turtles have hatched and have left the nest or can be safely relocated, as determined through coordination with CDFW.
- Because attempting to locate pond turtle nests will not necessarily result in detection, after completion of preconstruction surveys and any necessary relocation, exclusion

fencing will be placed around all construction sites adjacent to suitable aquatic habitats during the nesting season to eliminate the possibility of nest establishment in uplands adjacent to aquatic areas, as necessary.

- If construction activities occur near aquatic areas where turtles have been identified during preconstruction or other surveys, a biological monitor will be present during construction. If a turtle is found, it will be relocated, if necessary, to a site a suitable distance from construction activities.
- If a pond turtle is encountered on the Project site, any construction activity that could result in harm of the turtle will immediately cease and will not resume until the agency-approved biologist has moved the turtle to a safe location.

During O&M activities:

- For Category A activities (Appendix D): follow standard EPMs.
- For Category B and C activities (Appendix D): From April 15 to July 15, any ground-disturbing activity within 400 feet (122 meters) of a permanent pond, lake, creek, river, or slough that could affect the bed, bank, or water quality of any of these features will be prohibited OR an agency-approved biologist will inspect the Project area. If adult or juvenile pond turtles are present, an agency-approved biologist will monitor Project activities to ensure that no turtles are harmed. If the biologist determines that nests could be adversely affected, potential nesting areas will be avoided between June 1 and October 31.

MM BIO-12 Provide compensatory mitigation for impacts to special-status reptiles. If habitat for listed or other special-status reptiles cannot be avoided, Western will provide compensatory mitigation as follows:

- **Alameda Whipsnake.** Western will compensate for permanent and temporary loss of upland scrub habitats that could support Alameda whipsnake by (a) purchasing credits at a conservation bank approved by CDFW and USFWS, (b) purchasing a conservation easement, (c) donating funds to an approved in-lieu fee program, or (d) restoring habitats affected by the Project. For onsite creation or restoration, Western will develop and implement a mitigation, monitoring, and reporting plan with input from and approval by regulatory agencies that outlines performance standards and success criteria for ensuring long-term success of mitigation.
- **Blunt-Nosed Leopard Lizard.** Western will provide compensation for permanent and temporary impacts to blunt-nosed leopard lizard habitat by (a) purchasing credits at a conservation bank approved by CDFW and USFWS, (b) purchasing a conservation easement, (c) donating funds to an approved in-lieu fee program, or (d) restoring habitats affected by the Project. For onsite creation or restoration, Western will develop and implement a mitigation, monitoring, and reporting plan with input from and approval by regulatory agencies that outlines performance standards and success criteria for ensuring long-term success of mitigation.
- **Other Special-Status Reptiles.** If California legless lizard, coast horned lizard, or San Joaquin whipsnake are found during preconstruction surveys and avoidance of habitats is not feasible, Western will restore habitats temporarily affected. Surveys, fencing, and compensatory mitigation for blunt-nosed leopard lizard habitat and upland habitat for California red-legged frog and California tiger salamander will benefit these species as well.

MM BIO-13 **Avoidance and minimization measures for California red-legged frog.** Western will implement the following measures to protect California red-legged frog during construction and O&M activities.

During construction activities:

- California red-legged frog presence will be assumed in all aquatic habitats for which protocol surveys have not been conducted in the year prior to construction. Uplands within 1 mile (1.6 kilometers) will be assumed to be occupied around all aquatic habitats for which protocol surveys have not been conducted.
- If the Project may affect California red-legged frog, take authorization/permits will be obtained from the USFWS. Upon completion of the authorization/permit process, Western will implement the terms and conditions of the authorizations, which could include but may not be limited to the following.
 - Transmission towers and new access roads will be sited as far from aquatic habitats as is feasible.
 - To the extent feasible, construction activities will take place during the dry season (generally June 1 through September 30) within 1.24 miles (2 kilometers) of aquatic habitats. If construction extends into the wet season (generally October 1 through May 31), temporary exclusion fencing will be installed 100 feet (30.5 meters) out from work areas to prevent California red-legged frogs from entering construction areas as necessary.
 - Escape ramps will be constructed in all trenches or excavations to allow wildlife to escape.
 - Biological monitoring will be provided by a USFWS-approved biologist during construction in all areas within 1.24 miles (2 kilometers) of aquatic habitats. The biological monitor will identify, capture, and relocate sensitive amphibians present in work areas if necessary.
 - A 300-foot (91-meter) setback, incorporating both riparian vegetation and uplands, will be provided on all sides of aquatic habitats identified as occupied or assumed occupied by red-legged frogs as feasible. A setback may be reduced or expanded through consultation with the USFWS depending on whether it would (a) affect habitat or (b) result in adverse impacts to the species or the biological values of the habitat. Setbacks will maintain existing vegetation free of disturbance and new construction, equipment storage, vehicle parking, and other activities that might compact or disturb soils or vegetation or that could introduce contaminants into aquatic habitats. Setbacks will be clearly delineated during the construction.
 - Water quality will be maintained through implementation of appropriate erosion-control measures to reduce siltation and contaminated runoff from Project sites by maintaining vegetation within buffers and/or through the use of hay bales, filter fences, vegetative buffer strips, or other accepted equivalents.
 - Construction and other ground disturbances will be prohibited within setbacks. The use of insecticides, herbicides, rodenticides, and pesticides will occur in accordance with USEPA guidelines addressing the use of these materials in occupied California red-legged frog habitat.

- Where aquatic sites cannot be avoided by 300 feet (91 meters) on all sides, a USFWS-approved biologist will survey the work site immediately prior to construction activities. If California red-legged frogs, tadpoles, or egg masses are found, the approved biologist will contact USFWS to determine whether moving any of these life-stages is appropriate. In making this determination USFWS will consider whether an appropriate relocation site exists. If USFWS approves moving animals, the approved biologist will be allowed sufficient time to move California red-legged frogs from the work site before work activities begin. Only USFWS-approved biologists will participate in activities associated with the capture, handling, and monitoring of California red-legged frogs. Bare hands will be used to capture California red-legged frogs. USFWS-approved biologists will not use soaps, oils, creams, lotions, repellents, or solvents of any sort on their hands within two hours before and during periods when they are capturing and relocating individuals. To avoid transferring disease or pathogens from handling the amphibians, USFWS-approved biologists will follow the *Declining Amphibian Populations Task Force Fieldwork Code of Practice*.

During O&M activities:

- A USFWS-approved biologist will identify potential California red-legged frog breeding habitat within the vicinity of O&M activities, and will flag a 500-foot (152-meter) buffer. The following restrictions will apply within the buffer: (1) only manual vegetation removal will be allowed; (2) only direct (e.g., injection and cut-stump) herbicide application methods will be allowed, except when otherwise restricted; (3) no ground disturbance (e.g., digging or auguring) will be allowed; and (4) erosion-control devices will be of a material that will not entrap amphibians.
- If it is not feasible to follow the above-stated measures, a pre-activity survey will be conducted no more than 24 hours before Project O&M activities begin. If ground disturbance is required, an USFWS-approved biologist will identify potential California red-legged frog upland refuge habitat within disturbance areas. Areas that may provide suitable upland refuge will be avoided to the extent feasible. Ground disturbance will not occur in California red-legged frog aquatic/breeding habitat. If an area that provides suitable upland refuge must be impacted, a USFWS-approved biologist will determine if California red-legged frogs are present using visual surveys, an endoscope, or other accepted detection method. If California red-legged frogs are detected, the area will be avoided using a buffer determined appropriate by the biologist, and a USFWS-approved monitor will remain on site to ensure that California red-legged frogs are not impacted during Project activities in the vicinity. A USFWS-approved biologist will remain on site during all activities to ensure protection of California red-legged frog or an exclusion barrier will be constructed around the work site using USFWS-approved methods and materials. Exclusion materials will be removed at the end of the work activity. Crews will inspect any trenches left open for more than 24 hours for trapped animals. Only a USFWS-approved biologist will remove trapped animals.
- To comply with the California red-legged frog injunction for herbicide applications, Western will ensure that, in the counties named in the injunction, there will be no ground application of any of the chemicals named in the injunction (<http://www.epa.gov/espp/litstatus/redleg-frog/steps-info.htm>). Currently, the no-use buffer is 60 feet (18 meters) from any aquatic feature, aquatic breeding habitat, non-breeding aquatic habitat, and upland habitat.

MM BIO-14 **Avoidance and minimization measures for California tiger salamander and western spadefoot.** To protect California tiger salamander and western spadefoot, Western will implement the following measures.

During construction activities:

- California tiger salamander presence will be assumed in all aquatic habitats for which protocol surveys have not been conducted in the year prior to construction. Uplands within 1 mile (1.6 kilometers) will be assumed to be occupied around all aquatic habitats for which protocol surveys have not been conducted
- If the Project may affect California tiger salamander, take authorization/permits will be obtained from the USFWS. Upon completion of the authorization/permit process, Western will implement the terms and conditions of the authorizations.
- Transmission towers and new access roads will be sited as far from aquatic habitats as is feasible.
- To the extent feasible, construction activities will take place during the dry season (generally June 1 through September 30) within 1.24 miles (2 kilometers) of aquatic habitats. If construction extends into the wet season (generally October 1 through May 31), temporary exclusion fencing will be installed 100 feet (30.5 meters) out from work areas to prevent California tiger salamanders and western spadefoots from entering construction areas as necessary.
- Escape ramps will be installed in all trenches or excavations to allow wildlife to escape.
- Biological monitoring will be provided by an agency-approved biologist during construction in all areas within 1.24 miles (2 kilometers) of aquatic habitats. The biological monitor will identify, capture, and relocate sensitive amphibians present in work areas if necessary.
- A 300-foot (91-meter) setback, incorporating both riparian vegetation and uplands, will be provided on all sides of aquatic habitats identified as occupied or assumed occupied by California tiger salamanders and western spadefoots. A setback may be reduced or expanded in consultation with the USFWS depending on whether it would (a) affect habitat or (b) result in adverse impacts to the species or the biological values of the habitat. Setbacks will maintain existing vegetation free of disturbance and new construction, equipment storage, vehicle parking, and other activities that might compact or disturb soils or vegetation or that could introduce contaminants into aquatic habitats. Setbacks will be clearly delineated during the construction.
- Water quality will be maintained through implementation of appropriate erosion-control measures to reduce siltation and contaminated runoff from Project sites by maintaining vegetation within buffers and/or through the use of hay bales, filter fences, vegetative buffer strips, or other accepted equivalents.
- Construction and other ground disturbances will be prohibited within setbacks. The use of insecticides, herbicides, rodenticides and pesticides will occur in accordance with USEPA guidelines addressing the use of these materials in occupied California tiger salamander and western spadefoot habitat.
- Where aquatic sites cannot be avoided by 300 feet (91 meters) on all sides, an agency-approved biologist will survey the work site immediately prior to construction activities.

If California tiger salamanders, larvae, or eggs are found, the approved biologist will contact USFWS to determine whether moving any of these life-stages is appropriate. In making this determination USFWS will consider whether an appropriate relocation site exists. If USFWS approves moving animals, the approved biologist will be allowed sufficient time to move California tiger salamanders and western spadefoots from the work site before work activities begin. Only USFWS-approved biologists will participate in activities associated with the capture, handling, and monitoring of California tiger salamanders. Bare hands will be used to capture salamanders and toads. USFWS-approved biologists will not use soaps, oils, creams, lotions, repellents, or solvents of any sort on their hands within two hours before and during periods when they are capturing and relocating individuals. To avoid transferring disease or pathogens from handling the amphibians, agency-approved biologists will follow the *Declining Amphibian Populations Task Force Fieldwork Code of Practice*.

During O&M activities:

- A USFWS-approved biologist will identify potential California tiger salamander breeding habitat in the vicinity of O&M activities, and will flag a 500-foot buffer. The following restrictions will apply within the buffer: (1) only manual vegetation removal will be allowed; (2) only direct (e.g., injection and cut-stump) herbicide application methods will be allowed, except when otherwise restricted; (3) no ground disturbance (e.g., digging or augering) will be allowed; and (4) erosion-control devices will be of a material that will not entrap amphibians.
- If it is not feasible to follow the above-stated measures, a pre-activity survey will be conducted no more than 24 hours before O&M activities begin. If ground disturbance is required, a USFWS-approved biologist will identify potential CTS aestivation habitat (burrows, rock piles) within disturbance areas. CTS aestivation habitat will be avoided to the extent feasible. Ground disturbance will not occur in CTS breeding/aquatic habitat. If a burrow or other potential aestivation habitat must be impacted, a USFWS-approved biologist will determine if CTS are present within the burrow using an endoscope or other accepted detection method. If CTS are detected, the burrow will be avoided using a buffer determined appropriate by the biologist and a USFWS-approved monitor will remain on site to ensure that CTS are not impacted during Project activities in the vicinity. A USFWS-approved biologist will remain on site during all activities to ensure protection of CTS or an exclusion barrier will be constructed around the work site using USFWS-approved methods and materials. Exclusion materials will be removed at the end of the work activity. Crews will inspect any trenches left open for more than 24 hours for trapped animals. Only a USFWS-approved biologist will remove trapped animals.

MM BIO-15

Provide compensatory mitigation for impacts to listed amphibians. Western will provide compensation for permanent and temporary construction impacts to California tiger salamander and California red-legged frog aquatic and upland habitat through one or more of the following: (a) purchasing credits at a conservation bank approved by CDFW and USFWS, (b) purchasing a conservation easement, (c) donating funds to an approved in-lieu fee program, or (d) restoring habitats affected by the Project. For onsite creation or restoration, Western will develop and implement a mitigation, monitoring, and reporting plan with input from and approval by regulatory agencies that outlines performance standards and success criteria for ensuring long-term success of mitigation.

If Western intends to eliminate aquatic habitat including wetlands, ponds, springs, and other standing water sources, and to create new, onsite habitat, then the newly created habitat will be created and filled with water prior to dewatering and destroying the existing habitat. Dewatering and relocation of aquatic habitats should occur outside of the breeding season for red-legged frogs (approximately January through June).

If Western intends to eliminate aquatic habitat including wetlands, ponds, springs, and other standing water sources, and will not create new, onsite habitat, then dewatering of existing habitat should occur prior to commencement of construction and other site-disturbing activities. Dewatering and relocation of aquatic habitats should occur outside of the breeding season for red-legged frogs (approximately January through June). Preserve lands acquired to offset impacts to the red-legged frog must have occupied habitat of at least equal habitat value as determined by the USFWS.

MM BIO-16 **Avoidance and minimization measures for burrowing owl.** Western will protect burrowing owls by implementing the following methods derived from the CDFW *Staff Report on Burrowing Owl Mitigation* (CDFG, 2012).

During construction activities:

- In coordination with CDFW, a burrowing owl protection and monitoring plan will be developed following guidelines in the updated CDFW staff report (CDFG, 2012). It will include but may not be limited to (a) conducting a protocol survey of the Project area the year before construction begins to identify sites of wintering and breeding activity, (b) identifying measures to avoid and minimize impacts, (c) identifying restrictions on construction activities and buffer distances related to time of year, (d) determining whether burrow exclusion or closure will be necessary, and developing a plan for implementation, (e) developing mitigation measures and a compensation plan for unavoidable impacts, (f) conducting a preconstruction survey, and (g) developing a mitigation and monitoring plan to ensure success of mitigation. Compensatory mitigation could include habitat restoration or contribution to a conservation bank.

During O&M activities:

- From February 1 to August 31, Project construction, herbicide application (with the exception of direct application), and other O&M activities will be prohibited within 250 feet (76 meters) of potential burrowing owl nesting dens (ground squirrel burrows, culverts, concrete slabs, debris piles that could support nesting burrowing owls). From September 1 through January 31, disturbance will be prohibited within 160 feet (49 meters) of potential burrowing owl dens.
- If this is not feasible, a qualified biologist will conduct nesting and wintering surveys using methods described in California Burrowing Owl Consortium 1993, CDFG 2012, or currently accepted method. If nesting or wintering activity is detected, a CDFW-approved biologist will mark and monitor an appropriate non-disturbance buffer in the vicinity of burrows that have been active within the last three years.
- Within the buffer zone, all Project construction and O&M activities and herbicide applications will be prohibited from February 1 to August 31.

MM BIO-17 **Provide compensatory mitigation for impacts to occupied burrowing owl habitat.** For unavoidable impacts to burrowing owl habitat known to be occupied within the last 5 years, compensatory mitigation will be required. Compensation may take the form of (a) acquiring and dedicating lands into conservation easements; (b) purchasing mitigation credits at compensation ratios that have been approved by the CDFW; or (c) preserving area contiguous or near the acreage lost.

MM BIO-18 **Avoidance and minimization measures for California fully protected birds.** To protect the California fully protected golden eagle and white-tailed kite, Western will implement the following measures. The nesting period for these species is March 1 through August 15.

- For ground-breaking activities that begin outside the nesting season, a preconstruction nesting survey will not be necessary. For all ground-breaking activities that begin during the nesting season, a CDFW-approved biologist will conduct a preconstruction survey in suitable habitats for each species no more than 10 days prior to construction. The survey will encompass 0.5 miles (0.8 kilometers) in all directions from construction areas. If no nesting is detected, no further action will be required.
- During construction, if a golden eagle or white-tailed kite nest is detected, or if it is determined that courtship and nest initiation are underway within the survey distance, Western will establish a 0.5-mile (0.8-kilometer) no-disturbance buffer around the nest or center of activity. The buffer will be maintained until a CDFW-approved biologist has determined that the young have fledged or the nest is no longer active. If this buffer cannot feasibly be implemented, Western will contact and coordinate with CDFW well in advance of ground-disturbing activities (CDFW in litt. 2014c).
- During O&M, if a golden eagle or white-tailed kite nest is detected, or if it is determined that courtship and nest initiation are underway within 0.25 mile (0.4 kilometer), Western will establish a 0.25-mile (0.4-kilometer) no-disturbance buffer around the nest or center of activity; a smaller buffer may be established if a qualified biologist determines that the O&M activity will not adversely affect adults or young.
- When construction or O&M activities begin in a new area during the nesting season, another preconstruction survey will be completed as described above.

MM BIO-19 **Avoidance and minimization measures for least Bell's vireo.** To protect least Bell's vireo, Western will implement the following measures.

- Where any construction-related activity will take place within 1000 feet (305 meters) of potential least Bell's vireo habitat during the nesting season (mid-March through September), a protocol survey will be conducted by an agency-approved biologist, in coordination with the USFWS. If nesting least Bell's vireos are not detected, no further action is required for this species. If nesting is detected, Western will establish a clearly marked no-disturbance buffer of 1000 feet (305 meters) around the nest, or center of activity if the nest cannot be detected. The buffer will be maintained until the agency-approved biologist has determined that the nest is no longer active or that the young have fledged.
- Biological monitoring will be provided by an agency-approved biologist during construction in all areas within 1000 feet (305 meters) of occupied habitat. The biological monitor will ensure that construction activities do not disturb nesting vireos.

MM BIO-20 **Avoidance and minimization measures for Swainson's hawk.** To protect nesting Swainson's hawks, Western will implement the following measures pursuant to guidelines from CDFW (CDFG, 1994) and the Swainson's Hawk Technical Advisory Committee (SWTAC, 2000); and pursuant to informal consultation for the Project initiated January 2014 (CDFW in litt. 2014c). The nesting season for Swainson's hawks, which encompasses the courtship and nest initiation phase, is considered by CDFW to be February 1 through September 15.

During construction activities:

- An agency-approved biologist will conduct preconstruction surveys according to guidelines presented in SWTAC 2000, which establishes five survey periods. During the first period (January 1 to March 20) potential nest locations are identified. During the second period (March 20 to April 5) Swainson's hawks are returning to traditional nesting territories during a time when most nest trees are leafless and birds and their activities are easier to detect. During the third period (April 5 to April 20) pair bonding, courtship, and nest construction are taking place and while nests may be more difficult to see, they can be inferred from increased activity. During the fourth period (April 20 to June 10) nests are difficult to detect and activity is low because adults are incubating. Surveys should not be initiated during the fourth period. During the fifth period (June 10 to July 30), young birds may be active and visible, and both adults are making many visits to the nest with prey. Three surveys will be completed in at least at least two of the survey periods immediately prior to Project initiation. Surveys will encompass the area within 0.5 miles (0.8 kilometers) of construction activities.
- In addition, if ground-disturbing activities are to take place during the breeding season (February 1 through September 15), the CDFW recommends that additional preconstruction surveys for active nests be conducted by a CDFW-approved biologist no more than 10 days prior to the start of construction.
- If an active Swainson's hawk nest is found, a 0.5-mile (0.8-kilometer) no-disturbance buffer will be established around the nest. If such a buffer cannot feasibly be implemented, coordination with CDFW will occur well in advance of ground-disturbing activities and the acquisition of a state incidental take permit pursuant to Fish and Game Code section 2081(b) may be warranted.

During O&M activities:

- From February 1 to September 15, a 0.25-mile buffer zone will be established and maintained around potential Swainson's hawk nest trees, within which there will be no intensive disturbance (e.g., use of heavy equipment, power saws, chippers, cranes, or draglines). This buffer may be adjusted, as assessed by a qualified biologist, based on changes in sensitivity exhibited by birds over the course of the nesting season and the type of O&M activity performed (e.g., high noise or human activity such as mechanical vegetation maintenance versus low noise or human activity such as semi-annual patrols), or a qualified biologist will conduct nest surveys using methods described in SHTAC 2000 (or more current protocol) to determine absence.
- Within 0.25 mile of an active nest, routine O&M activities will be deferred until after the young have fledged or until it is determined by a CDFW-approved biologist that the activities will not adversely affect adults or young.

MM BIO-21 Provide compensatory mitigation for impacts to Swainson's hawk foraging habitat. Compensatory mitigation will be required for loss of Swainson's hawk foraging habitat using compensation ratios provided in CDFG 1994 (or more current document) or a ratio determined through coordination with CDFW. As provided in CDFW 2014c, compensatory mitigation for Swainson's hawk will also be required for loss of nest trees.

MM BIO-22 Avoidance and minimization measures for tricolored blackbird. Tricolored blackbird nests colonially in a variety of densely vegetated habitats. The nesting season for tricolored blackbird is March 1 through August 15.

During construction activities:

- For ground-breaking activities that begin or take place outside the nesting season, a preconstruction nesting survey will not be necessary. For all ground-breaking activities that begin during the nesting season, a biologist experienced with tricolored blackbirds and their range of habitats will conduct a preconstruction survey no more than 10 days prior to construction. The survey will encompass 500 feet (152 meters) in all directions from construction areas. If no nesting is detected, no further action will be required.
- If nesting is detected, or if it is determined that courtship and nest initiation are underway within 500 feet (152 meters) of a construction or laydown area, Western will establish a clearly marked 500-foot (152-meter) no-disturbance buffer around the outer edges of the habitat. The buffer will be maintained until a CDFW-approved biologist has determined that the colony is no longer active.
- If tricolored blackbirds begin nesting near construction or laydown areas after construction has started, a clearly marked no-disturbance buffer will be established around the colony that is the maximum feasible size for the circumstances. The buffer will be maintained until the colony is no longer active.
- Biological monitoring will be provided by a CDFW-approved biologist during construction in all areas within 500 feet (152 meters) of occupied habitat. The biological monitor will ensure that construction activities do not disturb the colony.
- When construction begins in a new area during the nesting season, another preconstruction survey will be completed as described above.

During O&M activities:

- From March 1 to August 15, herbicide application (with the exception of direct application) and vegetation clearing/disturbance will be prohibited in marshes, willows, and blackberry thickets OR a qualified biologist will conduct a nesting survey prior to O&M activities. If nesting activity is detected, a qualified biologist will mark and monitor an appropriate buffer zone around the nesting colony within which all O&M activities and herbicide applications will be prohibited from March 1 to August 15.

MM BIO-23 Avoidance and minimization measures for other special-status and native birds. To protect loggerhead shrike, long-eared owl, Modesto song sparrow, northern harrier, short-eared owl, yellow-headed blackbird, and other non-listed birds protected by the MBTA and California Fish and Game Code, Western will implement the following measures. The nesting season for these species is March 1 through August 31.

- For ground-breaking activities that begin or take place outside the nesting season, a preconstruction nesting survey will not be necessary. For all ground-breaking activities that begin during the nesting season, a CDFW-approved biologist will conduct a preconstruction survey in suitable habitats for each of these species no more than 10 days prior to construction. The survey will encompass 250 feet (76 meters) in all directions from construction areas for loggerhead shrike, Modesto song sparrow, and yellow-headed blackbird, and 500 feet (152 meters) for long-eared owl, northern harrier, and short-eared owl. For species covered by the MBTA and California Fish and Game Code, but with no other special status, the survey area will encompass a sufficient area around the work site to identify nests that are present and determine their status. A sufficient area means any nest within an area that could potentially be affected by the Project. If no nesting is detected, no further action will be required.
- During construction, if nests of loggerhead shrike, long-eared owl, Modesto song sparrow, northern harrier, short-eared owl, or yellow-headed blackbird are detected, or if it is determined that courtship and nest initiation are underway within this survey distance, Western will establish a clearly marked 250-foot (76-meter) no-disturbance buffer around each nest or center of activity for loggerhead shrike, Modesto song sparrow, and yellow-headed blackbird, and a 500-foot (152-meter) buffer around each nest or center of activity for long-eared owl, northern harrier, and short-eared owl. Buffers will be maintained until a CDFW-approved biologist has determined that the young have fledged or the nest is no longer active.
- During O&M, if nests of loggerhead shrike, long-eared owl, Modesto song sparrow, northern harrier, short-eared owl, and/or yellow-headed blackbird are detected, or if it is determined that courtship and nest initiation are underway within the survey distance, Western will establish a clearly marked 250-foot (76-meter) no-disturbance buffer around each nest or center of activity for loggerhead shrike, Modesto song sparrow, and yellow-headed blackbird, and a 500-foot (152-meter) buffer around each nest or center of activity for long-eared owl, northern harrier, and short-eared owl; a smaller buffer may be established if the biologist determines that the O&M activity will not adversely affect adults or young.
- Identified nests will be surveyed prior to construction or O&M activities to establish a behavioral baseline. Once work commences, all nests of MBTA- and Fish and Game Code-covered birds that are not designated as any other special status will be monitored during work activities to detect any behavioral changes as a result of the Project. If behavioral changes are observed, the work causing that change will cease and CDFW and USFWS will be contacted for additional avoidance and minimization measures. *Or*, if monitoring of identified nests by an agency-approved wildlife biologist is not feasible, CDFW and USFWS recommend a minimum no-disturbance buffer of 250 feet (76 meters) around active nests of non-listed passerine-type bird species and a 500-foot (152-meter) no-disturbance buffer around the nests of non-listed raptors until the breeding season has ended, or until an agency-approved biologist has determined that the young have fledged and are no longer reliant upon the nest or parental care for survival. Variance from these no-disturbance buffers may be implemented when there is compelling biological or ecological reason to do so, such as when Project activities would be concealed from a nest site by topography. Any variance from these buffers will be supported by an agency-approved biologist and it is recommended that CDFW and USFWS be notified in advance of implementation of a no-disturbance buffer variance.

- When construction or O&M begins in a new area during the nesting season, another preconstruction survey will be completed as described above.

MM BIO-24 **Avoidance and minimization measures for American badger.** To protect American badger, Western will implement the following measures.

- Concurrent with other required surveys (e.g., kit fox and burrowing owl), a CDFW-approved biologist will conduct a preconstruction survey to identify the presence of American badgers. If this species is not found, no further action will be required. If badgers are identified, they will be passively relocated using burrow exclusion (e.g., installing one-way doors on burrows) or similar CDFW-approved exclusion methods. In unique situations it might be necessary to actively relocate badgers (e.g., using live traps) to protect individuals from potentially harmful situations. Such relocation will be performed with advance CDFW coordination and concurrence. When unoccupied dens are encountered outside of work areas but within 100 feet (30.5 meters) of proposed activities, vacated dens will be inspected to ensure they are empty and temporarily covered using plywood sheets or similar materials.
- If badger occupancy is determined at a given site within a construction area, construction will be halted. Depending on the den type, reasonable and prudent measures to avoid harming badgers will be implemented and may include seasonal limitations on Project construction near the site (i.e., restricting the construction period to avoid spring-summer pupping season), establishing a construction exclusion zone around the identified site, or resurveying the den a week later to determine species presence or absence.

MM BIO-25 **Avoidance and minimization measures for special-status bats.** To protect Townsend's big-eared bat and other special-status bats, Western will minimize impacts by performing preconstruction surveys and creating no-disturbance buffers around active bat-roosting sites, especially maternity roosts and especially during the bat pupping season (April 1 through August 15) for Project construction and O&M activities using the following measures.

- Before construction or O&M activities within 250 feet (76 meters) of trees, cliffs, or caves, a CDFW-approved bat biologist will survey for special-status bats. If no evidence of bats (i.e., direct observation, guano, staining, or strong odors) is observed, no further mitigation will be required. If evidence of bats is observed, Western will implement the following measures to avoid potential impacts on breeding populations:
 - A no-disturbance buffer of 250 feet (76 meters) will be created around active bat roosts or occupied roosting habitat during the pupping season (April 1 through August 15). Bat roosts initiated during construction will be presumed to be unaffected by the indirect effects of noise and construction disturbances. However, the direct take of individuals will be prohibited without further coordination with CDFW.
 - Removal of trees showing evidence of active bat use will occur during the periods least likely to affect bats in winter hibernacula or maternity roosts, as determined by a CDFW-approved bat biologist (generally between August 15 and October 15, and between February 15 and April 1). If the exclusion of bats from potential roost sites is necessary to prevent indirect impacts due to construction noise and adjacent human activity, bat exclusion activities (e.g., installation of netting to block roost entrances) will be conducted by a CDFW-approved biologist.

MM BIO-26 **Avoidance and minimization measures for special-status kangaroo rats.** Western will either assume presence of giant and short-nosed kangaroo rats and implement measures to avoid or minimize impacts, or conduct research to assess habitat potential. Research could take the form of (a) evaluating the Project area using a model based on satellite imagery currently being applied to giant kangaroo rat habitats throughout their range (T. Bean pers. comm.) or other habitat models or (b) conducting protocol trapping in potentially suitable areas immediately prior to construction. If research indicates that kangaroo rats are not likely to be present, no further action will be required. If Western either assumes presence or research indicates that either kangaroo rat species could be present, Western will implement the following measures.

- Prior to construction or O&M activities, any active burrows in the vicinity of work sites will be flagged and marked with a burrow number. Exclusion zones with a 30-foot (9-meter) radius will be established around any active burrow. Construction activities, with the exception of essential vehicle operation on existing roads and foot travel, will be prohibited within this exclusion zone.
- A biological monitor will be on site for all activities within suitable kangaroo rat habitat. Prior to construction or O&M activities each day within suitable habitat, the monitor will conduct a brief ground survey of the site to verify that no kangaroo rats are present within the site. The biological monitor will have the authority to stop and/or redirect Project activities in coordination with the project manager and Western's natural resources staff to ensure the protection of giant kangaroo rats. The biological monitor will complete daily reports/logs summarizing activities and environmental compliance.
- Installation of barrier fencing around the work site may be used to further limit the risk of direct impacts to kangaroo rats where necessary. Barrier fencing will at no time inhibit the kangaroo rat's ability to move between its den and other habitats that allow breeding, feeding, and sheltering. All barriers will be removed at the end of Project activities.
- If giant kangaroo rats are detected within a disturbance site, through coordination with USFWS and if necessary, they may be relocated to a suitable site away from Project activities but as close to the disturbance site as feasible. Relocation methods will follow the recommendations in Tennant et al. (2013) or other USFWS-approved methods.

MM BIO-27 **Avoidance and minimization measures for San Joaquin kit fox.** To protect San Joaquin kit fox, Western will implement the following measures.

- To the extent feasible, Western will avoid Project construction and O&M activities that require ground disturbance or off-road travel between December 1 and May 31, the kit fox breeding/pupping season.
- Prior to Project construction or O&M activities that involve ground disturbance, off-road travel, or vegetation management in suitable kit fox habitat, an agency-approved biologist will conduct habitat/den surveys in accordance with the "Small Projects" recommendations in the 2011 USFWS Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox Prior to or During Ground Disturbance (USFWS, 2011). Any suitable den (i.e., burrow with an entrance greater than 4 inches in diameter)

will be monitored for evidence of kit fox use by placing either a tracking medium or wildlife monitoring cameras at the entrance for at least three consecutive nights. Active dens will be marked with a 100-foot (30.5-meter) buffer and natal or pupping dens (December 1 through May 31) will be marked with a 1,000-foot (305-meter) buffer. Construction activities, with the exception of essential vehicle operation on existing roads and foot travel, will be prohibited within this buffer area.

- If activities must occur within 100 feet (30.5 meters) of an active den, San Joaquin kit foxes will be excluded from the den. Methods will follow those outlined in USFWS 2011. The den will be monitored for at least five consecutive nights from initial observation to allow the animal to move to another den during its normal activity. Use of this den may be discouraged by partially plugging the den in such a manner that any resident animal can easily escape but may be discouraged from re-entering. Once the kit fox has abandoned the den or is still present after five or more consecutive days of partial plugging and monitoring, the den will be plugged or excavated (by hand as feasible) when the qualified biologist determines that the animal is absent due to normal activities. Natal dens will not be destroyed or disturbed during breeding/pupping season (December 1 through May 31).
- A biological monitor will be on site for any work activities within suitable kit fox habitat. Prior to construction activities each day, the monitor will conduct a brief ground survey of the site to verify that no kit foxes are present. The biological monitor will have the authority to stop and/or redirect Project activities in coordination with the project manager and Western's natural resources staff to ensure the protection of kit foxes. The biological monitor will complete daily reports/logs summarizing activities and environmental compliance.
- Installation of barrier fencing around the work site may be used to further limit the risk of direct impacts on kit fox. If necessary, barrier fencing will be used to prevent kit foxes from entering the work site and getting injured or killed by equipment but will at no time inhibit the kit fox's ability to move between its den and other habitats that allow breeding, feeding, and sheltering. All barriers will be removed at the end of construction or O&M work.
- Any excavated, steep-walled holes or trenches more than 2 feet (0.6 meter) deep will be covered at the close of each working day with plywood or similar materials or escape ramps will be installed in the hole or trench. Before any hole or trench is filled, it will be inspected for trapped animals.
- All construction pipes, culverts, or similar structures with a diameter of 4 inches (10 centimeters) or more that are stored at a construction site overnight will be thoroughly inspected for kit foxes before the pipe is buried, capped, or moved. If a kit fox is discovered inside a pipe, that section of pipe will not be moved until the kit fox has left the pipe.
- Use of rodenticides and herbicides in the Project area will be limited to the extent feasible. Use of any such compounds will observe label and other restrictions mandated by the U.S. Environmental Protection Agency, California Department of Food and Agriculture, and other state and federal legislation. If rodent control must be conducted, zinc phosphide will be used as feasible because it presents a lower risk to kit foxes.

MM BIO-28 Provide compensatory mitigation for impacts to San Joaquin kit fox. Compensatory mitigation will be required for temporary and permanent impacts to San Joaquin kit fox habitat. Compensation may take the form of (a) acquiring and dedicating lands into conservation easements or (b) purchasing mitigation credits at compensation ratios that have been approved by state and federal agencies. Impacts within conservation easements may require compensatory mitigation at higher ratios than impacts outside of easements, and mitigation will be consistent with the requirements of the easement.

Level of Significance after Mitigation

Mitigation Measures BIO-1 through BIO-28 provide a variety of avoidance and minimization measures for listed and other special-status species and their habitats. Preconstruction surveys would be conducted for special-status species including plants (MM BIO-1), Alameda whipsnake (MM BIO-7), blunt-nosed leopard lizard (MM BIO-8), California Species of Special Concern reptiles and amphibians (MMs BIO-9 and BIO-14), giant garter snake (MM BIO-10), western pond turtle (MM BIO-11), California red-legged frog (MM BIO-13), California tiger salamander (MM BIO-14), burrowing owl (MM BIO-16), least Bell's vireo (MM BIO-19), Swainson's hawk (MM BIO-20), tricolored blackbird (MM BIO-22), other special-status and native birds (MMs BIO-18 and BIO-23), American badger (MM BIO-24), special-status bats (MM BIO-25), special-status kangaroo rats (MM BIO-26), and San Joaquin kit fox (MM BIO-27). These mitigation measures include a suite of species-specific avoidance and minimization measures for special-status species, if present, to be implemented during construction and O&M activities. These avoidance and minimization measures include biological monitoring; seasonal restrictions; buffers around occupied habitats, burrows, and nests; relocation of individuals from work areas to nearby suitable habitat out of harm's way; exclusion fencing in occupied habitats; restrictions on herbicide and rodenticide use; and management of potential wildlife pitfalls to avoid entrapment.

Where avoidance of impacts to occupied habitats is not feasible, Western would provide compensatory mitigation and habitat replacement as described in Mitigation Measures BIO-3 (plants), BIO-4 (federally listed branchiopods), BIO-6 (valley elderberry longhorn beetle), BIO-12 (special-status reptiles), BIO-15 (listed amphibians), BIO-17 (burrowing owl), BIO-21 (Swainson's hawk), and BIO-28 (San Joaquin kit fox). Compensatory mitigation would vary by species and impact area, consistent with agency accepted guidelines and permit conditions (as applicable). Compensatory mitigation for most species can be achieved through (a) purchasing credits at a conservation bank approved by CDFW and USFWS, (b) purchasing a conservation easement, (c) donating funds to an approved in-lieu fee program, or (d) restoring habitats affected by the Project.

Together, implementation of Mitigation Measures BIO-1 through BIO-28 would effectively avoid, minimize, and compensate for impacts to special-status plants and wildlife and their habitats, and this impact would be less than significant in each Project segment.

<p>Impact BIO-2 Adversely and substantially affect native plant communities, including riparian areas or other sensitive communities.</p>
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Construction activities would result in direct adverse effects to native vegetation, including sensitive communities, primarily from vegetation removal and grading for access roads, tower pads, and other temporary and permanent ground disturbance. Loss of sensitive native vegetation is adverse in a regional context, due to limited distribution. Direct impacts to native vegetation would be moderate in intensity, as vegetation removal would be dispersed throughout the entire Project area. Table 4.4-1 presents estimated temporary and permanent disturbance by vegetation and landform type within the Project corridor. Because the exact locations of Project features is not yet known, the estimates were developed by calculating the proportion of the total acres in each segment corridor that would be

subject to temporary and permanent disturbance, and applying that proportion to the amount of each habitat type in the corridor. Only those impacts that would occur entirely within the corridors (i.e., new structures, pulling sites, the new Tracy East Substation [North Segment], and the new Los Banos West Substation [San Luis 500-kV Segment]) can be estimated because vegetation was mapped only within the corridors (see Figure 3 of Appendix C). Roads and material storage yards may occur outside the corridors and would result in additional temporary and permanent direct impacts to vegetation during construction. See Appendix E for Project disturbance assumptions.

Indirect effects to vegetation during construction could occur from dust, erosion, and degradation of habitat and competition from spread of invasive weeds; these effects would range from short-term (dust and erosion) to long-term (habitat degradation and spread of weeds). Indirect effects would be of the same type but of a lower magnitude during O&M activities.

Impacts to great valley riparian forest and scrub habitats and freshwater emergent wetlands would occur if large woody vegetation was removed from the water's edge in riparian habitats. This could result in additional solar heating of the water. Removing vegetation in riparian zones could also result in erosion with the subsequent increase in sedimentation of the watercourse. This could reduce the value of the habitat to aquatic and semi-aquatic wildlife. However, sedimentation control measures would be implemented to prevent sediment from reaching riverine habitat.

Where previously cleared areas are not available, it may be necessary to clear vegetation for pulling sites and staging areas. These areas may include locations where pulling sites occur at turning structures. Removing vegetation in these areas would be a short-term impact because temporarily disturbed areas would be restored following construction. However, this ground disturbance may contribute to the introduction or spread of noxious weeds.

The introduction and spread of invasive weeds can adversely affect natural plant communities by displacing native plant species that provide shelter and forage for wildlife species. Vegetation removal and other land-disturbing activities and access road use can contribute to the introduction or spread of invasive weeds. Equipment would be washed prior to entering sensitive areas within the Project area to avoid introducing new weed seeds. In addition, seed mixtures applied for erosion control and restoration will be certified as free of noxious weed seed, and will be composed of native species or sterile nonnative species. Where appropriate, herbicides would be used to control weeds, but use would conform with standards in the California Department of Pesticide Regulation PRESCRIBE database to avoid adverse effects to non-target species and habitats. Weed control measures would be implemented during construction and O&M activities.

Under CEQA, direct and indirect impacts to native vegetation, including sensitive plant communities, would be significant absent mitigation. This impact would be the same for the North, Central, San Luis, and South segments.

Table 4.4-1. Disturbance to Vegetation and Landforms in the Proposed Project Corridor

Type	North Segment		Central Segment		San Luis Segment 500-kV		San Luis Segment 70-kV		South Segment	
	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)
Aqueducts and other waters*	0.76	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.01
Ephemeral creek*	0.10	0.01	3.66	0.35	0.04	0.00	0.01	0.00	0.17	0.02
Freshwater marsh*	0.16	0.02	0.09	0.01	0.20	0.02	0.21	0.00	0.01	0.00
Grassland, native perennial*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Intermittent creek*	0.01	0.00	1.08	0.10	0.04	0.00	0.00	0.00	0.15	0.01
Irrigation ditches*	0.26	0.02	0.00	0.00	0.28	0.03	0.28	0.00	0.45	0.04
Lake*	0.00	0.00	0.00	0.00	0.20	0.02	0.20	0.00	0.00	0.00
Pond*	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Riparian great valley forest*	0.00	0.00	0.75	0.07	0.30	0.03	0.31	0.00	0.00	0.00
Riparian great valley scrub*	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vernal pool*	0.00	0.00	0.03	0.00	0.11	3.40	0.01	0.00	0.03	0.00
Waters, drainage*	0.25	0.02	0.00	0.00	0.00	0.00	0.36	0.00	1.46	0.14
Waters, impoundment*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Waters, river*	0.04	0.00	0.94	0.09	0.17	0.02	0.00	0.00	0.03	0.00
Wetlands, other*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
Wetlands, seasonal*	0.27	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.02	0.00
Wildflower fields*	0.00	0.00	2.16	0.21	0.00	0.00	0.00	0.00	0.00	0.00
Barren	1.01	0.10	1.56	0.15	1.07	0.10	1.05	0.00	2.83	0.27
Commercial	1.01	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coyote brush scrub	0.00	0.00	0.00	0.00	0.45	2.51	0.56	0.00	1.76	0.17
Grain fields planted with hay or alfalfa	17.45	14.78	6.10	0.59	0.00	0.00	0.00	0.00	1.76	0.17
Grassland, non-native annual	17.89	1.70	220.35	21.34	43.65	55.20	13.06	0.01	78.51	7.59
Irrigated pastures	0.85	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Orchards	0.99	0.09	5.93	0.57	0.00	0.00	0.00	0.00	0.00	0.00
Other	0.00	0.00	0.08	0.01	0.94	0.09	0.07	0.00	0.00	0.00
Agriculture, unspecified	0.00	0.00	3.73	0.36	0.00	0.00	0.00	0.00	5.75	0.56
Vineyards	0.00	0.00	1.45	0.14	0.00	0.00	0.00	0.00	0.00	0.00
Total	41.07	17.02	247.93	24.01	47.44	61.42	16.11	0.01	93.02	9.00

Vegetation and landforms marked with an asterisk () are considered sensitive.

Mitigation Measures for Impact BIO-2

MM BIO-1 Conduct surveys for special-status plants and sensitive habitats

MM BIO-2 Avoidance and minimization measures for special-status plants and vegetation communities

MM BIO-29 Avoidance and minimization measures for vernal pool and seasonal wetland habitats. During construction and O&M activities in the vicinity of vernal pools, vernal pool grasslands, and seasonal wetlands, Western will implement the following measures.

During O&M Category A Activities (see Appendix D):

- Vehicle access will be permitted only on well-established roads unless soils are dry. Soils will be considered sufficiently dry for vehicle access when they resist compaction, and after annual plants have set seed (generally June 1 to September 30, or as determined by qualified personnel based on personal observation of the soils). For patrolling the ROW off of established roads in a pickup truck, or for inspecting hardware on structures with a bucket truck, vernal pools, vernal pool grasslands, and seasonal wetlands will be avoided by 50 feet (15 meters) during the wet season (generally October 1 to May 31). No avoidance will be necessary if soils are completely dry.

During construction and O&M Category B and C activities (Appendix D) in the vicinity of vernal pools, vernal pool grasslands, and seasonal wetlands:

- Vehicle access will be permitted only on well-established roads unless soils are dry. Soils will be considered sufficiently dry for vehicle access when they resist compaction, and after annual plants have set seed (generally June 1 to September 30, or as determined by an agency-approved biologist based on personal observation of the soils). If vegetation management activities were proposed within 250 feet (76 meters) of a vernal pool, vernal pool grassland, or seasonal wetland, an agency-approved biologist will be present at all times to ensure the protection of the work-area limits below OR qualified personnel will clearly flag or fence the limits of the work area, according to limits presented in the following, prior to the maintenance activity. (The herbicide restriction measures generated by the PRESCRIBE database supersede those below where they are different.)
- Mixing or application of pesticides, herbicides, or other potentially toxic chemicals will be prohibited.
- Herbicide application to target vegetation with hand-held applicator (cut-stump treatment) will be prohibited within 25 feet (7.6 meters) in the wet season (generally October 1 to May 31) and allowed up to the edge of the pool or seasonal wetland in the dry season (generally June 1 to September 30).
- Herbicide application with power sprayers for spot treatment and selective elimination of target species will be prohibited within 100 feet (30.5 meters) in any season.
- Broadcast herbicide application by vehicle with boom for treating large or dense areas of the ROW will be prohibited within 150 feet (45.7 meters) in any season.
- Manual clearing of vegetation (chainsaw, axe, clippers) will be allowed up to the edge of the pool or seasonal wetland in the wet season (generally October 1 to May 31); a buffer will not be necessary in the dry season (generally June 1 to September 30).

- Mechanical clearing of vegetation (heavy-duty mowers, crawler tractors, or chippers) will be prohibited within 100 feet (30.5 meters) in the wet season (generally October 1 to May 31); a buffer will not necessary in the dry season (generally June 1 to September 30).
- For ground-disturbing activities, a 50-foot (15-meter) wet season or 25-foot (7.6-meter) dry season buffer zone from the edge of the vernal pool or wetland will be maintained and the vernal pool or wetland will be protected from siltation and contaminant runoff by use of erosion control. Erosion-control materials will be of a tightly woven natural fiber netting or similar material that will not entrap reptiles and amphibians (e.g., coconut coir matting). No monofilament plastics will be used for erosion control near vernal pools and seasonal wetlands. Erosion-control measures will be placed between the outer edge of the buffer and the activity area. All fiber rolls and hay bales used for erosion control will be certified as free of noxious weed seed. If work must occur within the buffer, the disturbance will not alter the hydrologic integrity of the wetland.
- For activities such as installation or repair of underground components (water, power, communication, or ground electrical line) or soil borings, a 250-foot (76-meter) buffer zone will be maintained. A smaller buffer could be approved after a site assessment by an agency-approved biologist, but must include silt fencing or other sediment control, to be established no less than 50 feet (15 meters) from the wetland boundary. If work must occur within the buffer, the disturbance will not alter the hydrologic integrity of the wetland.

MM BIO-30 **Avoidance and minimization measures for sensitive wetland habitats.** During construction and O&M activities in the vicinity of seeps, springs, ponds, lakes, rivers, streams, and marshes, and their associated habitats, Western will implement the following measures.

During O&M Category A activities (see Appendix D):

- The following activities will be prohibited at all times within 100 feet (30.5 meters) of a seep, spring, pond, lake, river, stream, or marsh, and their associated habitats:
 - vehicle access, except on existing access and maintenance roads
 - dumping, stockpiling, or burying of any material
 - mixing of pesticides, herbicides, or other potentially toxic chemicals
 - open petroleum products

During construction and O&M Category B and C activities (see Appendix D):

- The following activities will be prohibited at all times within 100 feet (30.5 meters) of a seep, spring, pond, lake, river, stream, or marsh, and their associated habitats:
 - vehicle access, except on existing access and maintenance roads
 - dumping, stockpiling, or burying of any material, except as required for specific O&M activities such as rip-rap
 - mixing of pesticides, herbicides, or other potentially toxic chemicals
 - open petroleum products
- For vegetation management or maintenance within 100 feet (30.5 meters) of any seep, spring, pond, lake, river, stream, or marsh, or any of their associated habitats, the following work-area limits will be provided (the herbicide restriction measures generated by the PRESCRIBE database supersede those below where they are different):

- Only manual clearing of vegetation will be permitted
- Foliar application of herbicides will be prohibited. Only cut-stump treatments of target vegetation will be allowed using herbicide approved for aquatic use by the EPA and in coordination with the appropriate land manager.
- For ground-disturbing activities, a 100-foot (30.5-meter) buffer zone will be maintained from the edge of the seep, spring, pond, lake, river, stream, marsh, or their associated habitats for protection from siltation and runoff of contaminants by use of erosion-control measures. If work must occur within the buffer, the disturbance will not alter the hydrologic integrity of the wetland. Erosion-control materials will be of a tightly woven natural fiber netting or similar material that will not entrap reptiles and amphibians (e.g., coconut coir matting). No monofilament plastics will be used for erosion control near seeps, springs, ponds, lakes, rivers, streams, or marshes. Erosion-control measures will be placed between the outer edge of the buffer and the activity area. All fiber rolls and hay bales used for erosion control will be certified as free of noxious weed seed.
- Western will obtain applicable section 404 discharge and 401 water-quality permits prior to any maintenance activities that must take place within jurisdictional wetlands or other waters of the U.S. These will be coordinated with USACE and RWQCB as needed.
- Dewatering work for maintenance operations adjacent to or encroaching on seeps, springs, ponds, lakes, rivers, streams, or marshes will be conducted to prevent muddy water and eroded materials from entering the water or marsh.
- All stream crossings will be constructed such that they reduce the potential for stream flows to result in increased scour, washout, or disruption of water flow. To the extent feasible, stream crossings will be located in stream segments without riparian vegetation, and structure footings will be installed outside of stream banks. Should Western need to modify existing access roads or install new access roads, they will be built at right angles to streams and washes to the extent feasible. Trees providing shade to water bodies will be trimmed only to the extent necessary and will not be removed unless they presented a specific safety concern.
- Trees that must be removed will be felled to avoid damaging riparian habitat. They will be felled out of and away from the stream maintenance zone and riparian habitat, including springs, seeps, bogs, and any other wet or saturated areas. Trees will not be felled into streams in a way that will obstruct or impair the flow of water, unless instructed otherwise. Tree removal that could cause streambank erosion or result in increased water temperatures will not be conducted in and around streams. Tree removal in riparian or wetland areas will be done only by manual methods.

MM BIO-31 Provide compensatory mitigation for impacts to sensitive plant communities. Western will purchase credits in an appropriate mitigation bank or habitat conservation bank for the vegetation community to be impacted. If a mitigation bank is not available Western will contribute in-lieu fees to a mitigation bank or habitat conservation bank that can provide appropriate mitigation for the vegetation type. Western will work with the appropriate resource agency (USFWS or CDFW) to ensure adequate compensation.

If no mitigation bank, conservation bank, or in-lieu-fee compensation is available then Western will prepare a mitigation, monitoring, and reporting plan that describes the compensatory mitigation measures that will be implemented for these vegetation communities. The mitigation plan will be submitted to the CDFW for approval and will outline performance standards and success criteria for ensuring long-term success of mitigation.

Impacts within conservation easements may require compensatory mitigation at higher ratios than impacts outside of easements, and mitigation will be consistent with the requirements of the easement.

Level of Significance after Mitigation

Mitigation Measures BIO-1, BIO-2, BIO-29, and BIO-30 provide a variety of avoidance and minimization measures for native plant communities, including riparian areas or other sensitive communities. Mitigation Measure BIO-1 requires surveys for sensitive habitats prior to construction. Mitigation Measures BIO-2, BIO-29, and BIO-30 require a variety of avoidance and minimization measures for sensitive communities to be implemented during construction and O&M. These avoidance and minimization measures include restrictions on off-road travel; erosion- and sediment-control measures; topsoil salvage for use in restoration; restrictions on herbicide use; avoidance of vernal pool and seasonal wetland habitats during the wet season; prohibitions on vehicle access, dumping/stockpiling, mixing of chemicals, and open petroleum products near wetland habitats; management of construction and O&M activities to prevent runoff into wetlands; measures to ensure minimize stream crossing impacts; and restrictions on activities that would damage riparian habitat. Where avoidance of impacts to sensitive communities is not feasible, Western would provide compensatory mitigation and habitat replacement as described in Mitigation Measures BIO-31. Together, implementation of Mitigation Measures BIO-1, BIO-2, BIO-29, BIO-30, and BIO-31 would effectively avoid, minimize, and compensate for impacts to native plant communities, including riparian areas or other sensitive communities. This impact would be less than significant in the North, Central, South, and San Luis segments.

Impact BIO-3 Substantially interfere with the movement or migration of any native resident or migratory fish or wildlife species, or impede the use of native wildlife nursery sites for more than one reproductive season.

The Proposed Project would not impact fish movement or migration, as no facilities would be built within waterways that support native fish. Due to the intermittent locations of construction activity and its temporary nature, terrestrial wildlife would not be physically prevented from moving around Project equipment in the transmission corridor, and the widely spaced towers would not physically obstruct wildlife movement during O&M. Access roads would be used infrequently except for temporary localized use during construction and O&M, and would not permanently obstruct movement. The Proposed Project's impacts to terrestrial wildlife movement and migration would be minor and short-term. There are no known wildlife nursery sites in the Project area, and no impacts would occur.

During Proposed Project operation, transmission lines may interfere with bird movement and migration by providing a collision and electrocution hazard. Pursuant to EPMs, Western would implement current best industry practices to minimize collision and electrocution risks from Project facilities during operation.

This impact would be less than significant. This impact would be the same in the North, Central, San Luis, and South segments.

Impact BIO-4 Have substantial adverse effects on wetlands and Waters of the U.S. and state.
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The following summarizes acres of potentially jurisdictional wetlands and waters of the U.S. and waters of the State in each segment corridor. See Figure 3 of Appendix C for the locations of potentially jurisdictional features. Western will avoid impacts within wetlands and Waters of the U.S. and state to the extent feasible.

- North Segment – 34.4 acres
- Central Segment – 77.0 acres
- San Luis Segment (500-kV) – 42.3 acres
- San Luis Segment (70-kV) – 42.4 acres
- South Segment – 18.4 acres

Access roads and new structures would be sited outside of wetlands and waters of the U.S. and state to the extent feasible. If avoidance is not feasible, direct adverse impacts could include removal of riparian vegetation from jurisdictional features; construction of access roads, culverts, or other Project components within jurisdictional waters; discharge of fill; degradation of water quality; and increased erosion and sediment transport. While loss of wetlands and waters of the U.S. and state would be site-specific, the context of this impact would be regional due to the limited distribution and high biological value of these resources. However, direct impacts would be short-term and minor due to the limited areas of potential impact.

Indirect adverse impacts could include alterations to the existing topographical and hydrological conditions and the introduction of non-native, invasive plant species. The context of this impact is regional, and while some indirect effects are short-term and minor in intensity, the spread of invasive weeds would be a long-term impact of moderate intensity. Indirect effects would be of the same type but of a lower magnitude during O&M activities.

Western's implementation of a variety of EPMs as part of the project would avoid or minimize impacts to wetlands and water of the U.S. and state during construction and O&M. Vehicles would be restricted to designated access routes and work areas, and temporary work areas would be restored following construction. Equipment would be washed prior to entering sensitive areas to avoid introducing new weed seeds. In addition, seed mixtures applied for erosion control and restoration will be certified as free of noxious weed seed, and will be composed of native species or sterile nonnative species. Where appropriate, herbicides would be used to control weeds, but use would conform with standards in the California Department of Pesticide Regulation PRESCRIBE database to avoid adverse effects to non-target species and habitats. The EPMs also require stormwater runoff control from work areas and erosion control during construction and O&M; this would prevent materials from entering jurisdictional waters and would prevent loss of soil in wetland areas. A hazardous-spill plan will be developed prior to construction and will remain in effect for all O&M activities. Fill, riprap, and other instream work would be limited to the minimum area required for access or protection of Western facilities and would be conducted during low- or no-flow conditions and would not restrict stream flows. All construction activities and vehicle access would be routed around wet areas, and if wet areas cannot be avoided, Western would use wide-track or balloon tire vehicles and equipment and/or timber mats. Nonetheless, under CEQA any direct and indirect impacts to jurisdictional wetlands and waters would be significant absent mitigation in the North, Central, San Luis, and South segments.

Mitigation Measures for Impact BIO-4

MM BIO-29 Avoidance and Minimization Measures for Vernal Pool and Seasonal Wetland Habitats.

MM BIO-30 Avoidance and Minimization Measures for Sensitive Wetland Habitats

MM BIO-32 Provide compensatory mitigation for impacts to wetlands and waters. Compensation for loss of wetlands and waters will depend on habitat value and integrity, and may take the form of creation, restoration, enhancement, or preservation. Federal and state agencies have a no-net-loss of wetlands policy, which requires that any permanent loss of wetlands be mitigated. Mitigation can be accomplished through purchase of credits in an approved wetland mitigation bank or contribution of in-lieu fees to a conservation bank or other conservation organization that will create the wetlands as mitigation/compensation for impacts from the Project. If these options are not available then mitigation will be accomplished by the creation of new wetlands on site or in an appropriate off-site location. For creation of new wetlands, Western will develop and implement a wetland mitigation, monitoring, and reporting plan in compliance with USACE and RWQCB guidelines. The plan will outline performance standards and success criteria for ensuring long-term success of mitigation. All newly created wetlands must be monitored and maintained for a minimum of 5 years to ensure achievement of performance standards and success criteria. Annual reporting to the USACE and RWQCB are required as part of monitoring.

Level of Significance after Mitigation

Mitigation Measures BIO-29 and BIO-30 require a variety of avoidance and minimization measures for wetlands and waters of the U.S. and state to be implemented during construction and O&M. These avoidance and minimization measures include restrictions on off-road travel; erosion- and sediment-control measures; topsoil salvage for use in restoration; restrictions on herbicide use; avoidance of seasonal wetland habitats during the wet season; prohibitions on vehicle access, dumping/stockpiling, mixing of chemicals, and open petroleum products near wetland habitats; management of construction and O&M activities to prevent runoff into wetlands; measures to ensure minimize stream crossing impacts; and restrictions on activities that would damage riparian habitat. Where avoidance of impacts to wetlands and waters of the U.S. and state is not feasible, Western would provide compensatory mitigation as described in Mitigation Measures BIO-32. Together, implementation of Mitigation Measures BIO-29, BIO-30, and BIO-32 would effectively avoid, minimize, and compensate for impacts to wetlands and waters of the U.S. and state. This impact would be less than significant in the North, Central, South, and San Luis segments.

Impact BIO-5 Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

The following local and regional policy documents were reviewed for consistency with the Proposed Project:

- East Alameda County Conservation Strategy
- Alameda County General Plan and Tree Ordinance
- San Joaquin County General Plan
- Stanislaus County General Plan
- Merced County General Plan

Generally, these policies and ordinances support the preservation, enhancement, and restoration of natural habitats and protection of special-status species. Because of the extensive planning involved in Project design, including implementation of Western's EPMs, as well as Mitigation Measures BIO-1 through BIO-32, the Proposed Project would be consistent with local and regional policies and ordinances protecting biological resources. No impact would occur.

Impact BIO-6 Conflict with the provisions of an adopted local, regional, state, or federal habitat conservation plan.

Habitat conservation plans (HCPs) in the Project area include the following:

- North Segment – Bay Delta Conservation Plan, San Joaquin County Multi-Species Conservation and Open Space Plan (SJMSCP)
- Central Segment – SJMSCP, Altamont Pass Wind Resource Area Habitat Conservation Plan (HCP)
- San Luis Segment – None
- South Segment – None

The Altamont Pass Wind Resource Area HCP covers activities associated with repowering and continued maintenance and operation of wind turbines in Alameda County, and is not applicable to the Proposed Project. The Bay Delta Conservation Plan is not yet adopted, and will focus on restoring the Sacramento–San Joaquin Delta ecosystem while securing California's water supplies. It is not applicable to the Proposed Project.

The SJMSCP covers 912,640 acres in San Joaquin County, and includes 97 covered species. The goals of the SJMSCP are to "provide a strategy for balancing the need to conserve open space and the need to convert open space to non-open space uses while protecting the region's agricultural economy; preserving landowner property rights; providing for the long-term management of plant, fish and wildlife species, especially those that are currently listed, or may be listed in the future, under the federal ESA or CESA; providing and maintaining multiple-use open spaces which contribute to the quality of life of the residents of San Joaquin County; and accommodating a growing population while minimizing costs to project proponents and society at large." (SJCOG, 2000). Portions of the Proposed Project are within areas covered by the SJMSCP. Species covered in the SJMSCP that occur within the Project area include diamond-petaled California poppy, caper-fruited tropidocarpum, California red-legged frog, Pacific pond turtle, tricolored blackbird, loggerhead shrike, Swainson's hawk, burrowing owl, and San Joaquin kit fox. Western would coordinate with the San Joaquin Council of Governments for impacts to special-status species covered under the SJMSCP. The Proposed Project would not conflict with any adopted HCP, so no impact would occur.

A number of conservation easements established to protect biological resources occur in the Project area, including the Simon Newman Ranch (Central Segment), the Tracy 580 Business Park Preserve (Central Segment), the Romero Ranch (San Luis Segment), and a permanent conservation easement for the protection of San Joaquin kit fox just north of O'Neill Forebay (San Luis Segment). The Proposed Project would avoid impacts within conservation easements to the extent feasible (Mitigation Measure BIO-2), and Western would comply with all applicable requirements within conservation easements (Mitigation Measures BIO-28 and BIO-31). The Proposed Project would not conflict with the provisions of any existing conservation easements, and no additional mitigation is required. This impact would be less than significant.

4.4.4 Corridor Alternatives

The following describes the impacts of each alternative to biological resources, relative to the impacts from the Proposed Project. No new impacts to biological resources would be introduced by any of the alternatives, but direct and indirect impacts may differ in magnitude from those described for the Proposed Project. Table 4 of Appendix C provides a comparison of habitat types in the proposed and alternative corridors, and Chapter 5 of Appendix C presents a detailed analysis of alternatives with respect to biological resources.

4.4.4.1 Central Segment

Patterson Pass Road Alternative

This alternative corridor would be the same length as the Proposed Project in the Central Segment and would have the same number of support structures. However, it would result in approximately 23 acres of additional permanent disturbance associated with access roads due to the more rugged terrain.

This alternative has more wildflower fields, Great Valley riparian forest, intermittent creeks, and seasonal wetlands than the Proposed Project corridor in the Central Segment, and less ephemeral creeks, freshwater marsh, and vernal pool habitat. More special-status plants were found in this alternative alignment compared with the Proposed Project. This alternative corridor also contains approximately 73.3 more acres of designated critical habitat for the California red-legged frog compared to the Proposed Project. Impacts to biological resources from this alternative would be similar to that of the Proposed Project in type, duration, and context; however, the intensity of impacts would be somewhat greater than the Proposed Project due to the greater amount of sensitive biological resources in this alignment. The alternative corridor also has a eucalyptus grove within the floodplain of Lone Tree Creek that supports a variety of nesting birds. Impacts of this alternative would be less than significant under CEQA, with implementation of Mitigation Measures BIO-1 through BIO-32.

4.4.4.2 San Luis Segment

Butts Road Alternative

This alternative corridor would be 0.5 miles longer than the Proposed Project in the San Luis Segment, would have two more support structures, and would result in approximately 1.2 acres of additional permanent disturbance and 1.8 acres of additional temporary disturbance. This alternative has more ephemeral creek, native grasslands, seasonal wetlands, and coyote brush scrub than the Proposed Project. The alternative has less Great Valley riparian forest, freshwater marsh, intermittent creek, and other potentially jurisdictional waters than the Proposed Project corridor, and the Butts Road Alternative would likely impact less sensitive plant communities than the Proposed Project. However, this alternative has more potential blunt-nosed leopard lizard habitat than the Proposed Project, and is more likely to adversely impact this listed species. This alternative would not cross the permanent San Joaquin kit fox conservation easement north of O'Neill Forebay. Impacts to biological resources from this alternative would be similar to that of the Proposed Project in type, duration, and context; however, the intensity of impacts to blunt-nosed leopard lizard would be somewhat greater than the Proposed Project while the intensity of impacts to sensitive plant communities and jurisdictional resources would be less. Impacts of this alternative would be less than significant under CEQA, with implementation of Mitigation Measures BIO-1 through BIO-32.

West of Cemetery Alternative

This alternative corridor would be 1.2 miles longer than the Proposed Project, would have six more support structures, and would require approximately 9 miles of additional new access roads in the San Luis Segment. The West of Cemetery Alternative would result in an estimated additional 43.6 acres of permanent and 5.4 acres of temporary disturbance compared with the Proposed Project. This alternative has more native grasslands, seasonal wetlands, and coyote brush scrub than the Proposed Project. The alternative has less ephemeral creek, Great Valley riparian forest, freshwater marsh, intermittent creek, and other potentially jurisdictional waters than the Proposed Project and would impact less sensitive plant communities than the Proposed Project. However, this alternative has more potential blunt-nosed leopard lizard habitat than the Proposed Project, and would result in greater adverse impacts to this listed species. This alternative would not cross the permanent San Joaquin kit fox conservation easement north of O'Neill Forebay. Impacts to biological resources from this alternative would be similar to that of the Proposed Project in type, duration, and context; however, the intensity of impacts to blunt-nosed leopard lizard would be somewhat greater than the Proposed Project while the intensity of impacts to sensitive plant communities and jurisdictional resources would be less. Impacts of this alternative would be less than significant under CEQA, with implementation of Mitigation Measures BIO-1 through BIO-32.

West of O'Neill Forebay 70-kV Alternative

This alternative corridor would be the same length as the 70-kV Proposed Project in the San Luis Segment, would have the same number of support structures, and would require the same length of new access roads. The West of O'Neill Forebay alternative has more non-native grassland, seasonal wetland, and northern claypan vernal pool habitat than in the 70-kV San Luis Segment, but less Great Valley cottonwood riparian forest and coastal and valley freshwater marsh habitat. This alternative supports more potential habitat for special-status species including San Joaquin kit fox, burrowing owl, California tiger salamander, and blunt-nosed leopard lizard. This alternative would cross the permanent San Joaquin kit fox conservation easement north of O'Neill Forebay as well as the Romero Ranch conservation easement; these easements would be avoided by the Proposed Project San Luis (70-kV) corridor. Impacts to biological resources from this alternative would be similar to that of the Proposed Project in type, duration, and context; however, the intensity of impacts to special-status species would be somewhat greater than the Proposed Project. Impacts of this alternative would be less than significant under CEQA, with implementation of Mitigation Measures BIO-1 through BIO-32.

4.4.4.3 South Segment

San Luis to Dos Amigos Alternative

This alternative has the same length of new access roads and same number of support structures as the Proposed Project in the South Segment, and its study area largely overlaps that of the Proposed Project. The only notable difference in biological resources is that this alternative corridor has less non-native grassland than the Proposed Project, but overall impacts to biological resources would be largely similar. Impacts of this alternative would be less than significant under CEQA, with implementation of Mitigation Measures BIO-1 through BIO-32.

Billy Wright Road Alternative

This alternative corridor would be approximately 1.5 miles longer than the Proposed Project, and would have eight more support structures. It would require approximately 3 miles additional permanent access roads, although it would not require temporary access roads (the Proposed Project would require about

2 miles of temporary roads), and it would require upgrades to 8 fewer miles of existing roads. The Billy Wright Road Alternative would permanently impact approximately 10.2 fewer acres than the Proposed Project, but would temporarily impact approximately 5.2 more acres. This alternative includes more non-native grassland but less agricultural lands than the Proposed Project in the South Segment. It has more potential habitat for the blunt-nosed leopard lizard. There are approximately 4.8 more acres of potentially jurisdictional resources in the Billy Wright Road Alternative corridor compared with the Proposed Project in the South Segment, although as with the Proposed Project, most of these areas can likely be avoided. Impacts to biological resources from this alternative would be similar to that of the Proposed Project in type, duration, and context; however, the intensity of impacts to special-status species would be somewhat greater than the Proposed Project. Impacts of this alternative would be less than significant under CEQA, with implementation of Mitigation Measures BIO-1 through BIO-32.

4.4.5 No Action/No Project

Under the No Action/No Project Alternative, Western would not construct the SLTP. No new facilities would be built; therefore, there would be no new impacts to biological resources.

4.5 Cultural Resources

4.5.1 Thresholds of Significance

The Proposed Project and alternatives would have significant, adverse effects on cultural resources if any activity associated with their construction or operation would result in:

- Damage or degradation to, or loss of a unique archaeological resource as defined by CEQA or a resource of archaeological, tribal, or historical value that is listed, or eligible for listing, on the National Register of Historic Places (National Register) or California Register of Historical Resources (California Register). (Impact CUL-1);
- Adverse effects to National Register– or California Register–eligible properties that cannot be satisfactorily mitigated as determined through consultation with the State Historic Preservation Officer and other interested parties (Impact CUL-2);
- Alterations to setting, feeling, or association for a National Register– or California Register–eligible properties (Impact CUL-3);
- Alterations of the setting or feeling to resources of concern to tribal or other interest groups (Impact CUL-4);
- Loss or degradation of a traditional cultural property (TCP) or sacred site, or if the property or site is made inaccessible for future use (Impact CUL-5);
- Unmitigated adverse effect to a TCP determined to be National Register–eligible or identified as important to tribes (Impact CUL-6); or
- Disturbance of any human remains, including those interred outside of formal cemeteries (Impact CUL-7).

4.5.2 Environmental Protection Measures

- Before construction, all construction personnel will be instructed by Western on the protection of cultural and paleontological resources and that cultural and paleontological resources might be present in the study area. To assist in this effort, the construction contract will address applicable federal and state laws regarding cultural and paleontological resources, including historic and prehistoric resources, and fossils. Construction personnel will be informed of the penalties for collection and removal of such resources, as well as the importance of these resources and the purpose and necessity of protecting them. Contractors will be trained to stop work near any discovery and notify Western’s regional environmental manager immediately, who will ensure that the resource is evaluated and avoided. Known cultural and paleontological resources will be flagged for avoidance and a minimum distance maintained for work disturbances.
- Western will have qualified archaeological monitors on site during ground disturbing construction activities. Archaeological monitors will look for any inadvertent cultural resource discoveries or other sensitive resources that may be important to tribes. Archaeologists will stop work in the immediate area should any such resources be uncovered until an assessment of the find can be made by Western.
- Cultural resources would be considered during post-EIS/EIR phases of Project implementation. Surveys would be completed prior to any ground disturbing activities or Project construction activities in order to inventory and evaluate cultural resources of the Project, or of any components that might

be added to the Project, or any existing components that would be modified. These surveys and any resulting historic property evaluation and analysis of effects would be conducted in accordance with Section 106 of the National Historic Preservation Act (NHPA) and in consultation with the State Historic Preservation Officer (SHPO). If adverse effects to historic properties cannot be avoided, Western would develop a Programmatic Agreement (PA) or Memorandum of Agreement (MOA) in consultation with the SHPO to determine appropriate mitigation to avoid lessen any adverse effects to cultural resources.

4.5.3 Proposed Project

Potential impacts to cultural resources were analyzed for all phases of the project, including construction, O&M, and for all alternatives. While a number of cultural resources were identified as being present within both the Proposed Project and alternative corridors, additional, unidentified resources likely exist in areas that were inaccessible to survey and below the ground surface. In total, 62 percent of the Proposed Project corridor has been surveyed for cultural resources. The potential exists for additional cultural resources to be identified within the Project area.

See Table 4.5-1 for cultural resources present and the survey coverage of the Proposed Project area, separated by segment.

Table 4.5-1. Resources and Survey Coverage by Project Segment

Segment	Resources ¹ Present	Percent Surveyed	Acres Surveyed	Percent Remaining to be Surveyed
North Segment	2	45	338.5	55
Central Segment	1	71	2092.5	29
San Luis Segment	2	32	455.8	68
San Luis Segment 70-kV	1	58	295.2	42
South Segment	0	53	392.8	47

1 – Refers to cultural resources recommended as eligible to the National or California Registers as well as unevaluated resources.
Source: Ballard et al., 2015; Holm et al., 2014b

The majority of resources that were encountered within the Proposed Project area were evaluated for their National/California Register–eligibility. A total of four resources that have been previously recommended eligible for listing on the National Register or California Register were identified within the Proposed Project area: the California Aqueduct (P-24-001931), the McCabe Road Bridge (P-24-001934), the buried San Joaquin Pipelines No. 1-3 (P-39-004860), and the Delta-Mendota Canal (P-39-000089). All of these are related to water conveyance and any impacts to them would be similar.

Potential impacts were identified based on the predicted interaction between construction, operation, and maintenance activities with the affected environment and the impact significance criteria described above. Project EPMs, were considered as project features in the impact analysis.

Construction and Operations and Maintenance

During construction, impacts to cultural resources would be primarily caused by ground disturbing activities, including operation of heavy equipment, trenching for utilities, grading and vegetation clearing for access roads, site leveling, auguring of transmission tower foundations, and other infrastructure excavations. These activities would have the potential to cause direct adverse effects to significant cultural resources. Indirect impacts could include visual and noise impacts to the setting and feeling of cultural resources and damage caused by vibrations and dust from construction to historic period built environment resources and prehistoric rock art. Impacts to cultural resources could also occur during

operations and maintenance activities such as grading access roads and vegetation removal. The work procedures for major repairs, such as replacement of towers or conductors, would be essentially identical to that of new construction.

Impact CUL-1	Cause damage, degradation to, or loss of a unique archaeological resource as defined by CEQA or a resource of archaeological, tribal, or historical value that is listed, or eligible for listing, on the National Register or California Register.
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Construction and operations and maintenance activities, particular any involving ground disturbance, can cause direct adverse impacts to cultural resources. Additionally, these activities can produce dust, sound, vibration, and other issues that may cause indirect damage or degradation to cultural resources. Any adverse impacts from ground disturbing activities, such as access roads, would be permanent, while adverse impacts to setting would likely be temporary from construction activities and long-term from the presence of transmission line structures. As per the Project EPMs, Western would identify and evaluate any cultural resources in unsurveyed portions of the project area prior to construction and would avoid any known cultural resources. Pursuant to EPMs, if National Register– or California Register–eligible resources are identified within currently unsurveyed areas of the project, construction and O&M activities would avoid them. If adverse effects to National Register– or California Register–eligible resources cannot be avoided, Western would develop a Programmatic Agreement (PA) or Memorandum of Agreement (MOA) in consultation with the SHPO to determine appropriate mitigation to avoid or reduce any adverse effects to cultural resources. Archaeological monitors would be onsite during ground-disturbing activities in order to minimize impacts to inadvertently discovered cultural resources. Thus, the construction of the Proposed Project would not result in damage or degradation to, or loss of a resource that is listed, or eligible for listing, on the National Register or California Register. Under CEQA, this impact would be less than significant. However, if unanticipated discoveries of unique archaeological resources as defined by CEQA are encountered, this impact would be significant without mitigation as there are no analogous EPMs to avoid impacts to these resources.

Mitigation Measures for Impact CUL-1

MM CUL-1 **Prepare and implement Archaeological Resource Management and Treatment Plan for unique archeological resources.** In the case of the inadvertent discovery of a unique archaeological resource, Western will have a Secretary of Interior–qualified archaeologist prepare and implement an Archaeological Resource Management and Treatment Plan that specifies the treatment of the resources. Prior to implementation, this document shall be submitted for review to the Authority as CEQA Lead Agency. This plan shall be tailored to the specific needs of the project area and the particular resources present there. The proposed Archaeological Resources Management and Treatment Plan must minimally address the following:

- A general research design shall be developed that:
 - Charts a timeline of all research activities.
 - Recapitulates any existing paleoenvironmental, prehistoric, ethnohistoric, ethnographic, and historic contexts to create a comprehensive historic context for the project vicinity.
 - Poses research questions and testable hypotheses specifically applicable to the resource types encountered.
 - Clearly articulates why it is in the public interest to address the research questions that it poses.

- Artifact collection, retention/disposal, and curation policies shall be discussed, as related to the research questions formulated in the research design. These policies shall apply to archaeological materials and documentation resulting from evaluation and data recovery of unique archaeological resources.
- Person(s) expected to perform each of the tasks, their responsibilities, and the reporting relationships between project construction management and the mitigation and monitoring team shall be identified.
- The manner in which Native American observers or monitors shall be included, the procedures to be used to select them, and their roles and responsibilities shall be described.
- All impact-avoidance measures (such as flagging or fencing) to prohibit or otherwise restrict access to sensitive resource areas that are to be avoided during ground disturbance, construction, and/or operation shall be described. Any areas where these measures are to be implemented shall be identified. The description shall address how these measures would be implemented prior to the start of ground disturbance and how long they would be needed to protect the resources from project-related impacts.
- The commitment to curate of all archaeological materials retained as a result of the archaeological investigations (survey, testing, data recovery), in accordance with CEQA Lead Agency requirements and the California State Historical Resources Commission's *Guidelines for the Curation of Archaeological Collections (HRC, 1993)*, into a retrievable storage collection in a public repository or museum shall be stated.

Level of Significance After Mitigation

Implementation of Mitigation Measure CUL-1 would reduce the impact of construction to unanticipated discoveries of unique archaeological resources, as defined by CEQA, by requiring the development and implementation of an Archaeological Resource Management and Treatment Plan. This would reduce the impact by avoiding the resource(s) to the extent feasible and documenting the information contained in the archaeological deposits through data recovery excavation or other appropriate method of data recovery. With mitigation, the impact would be reduced to a less than significant level.

This impact would be the same in the North, Central, San Luis, and South segments.

Impact CUL-2 Cause adverse effects to National Register– or California Register–eligible properties that cannot be satisfactorily mitigated.

Construction and operations and maintenance activities, particular any involving ground disturbance could cause direct adverse effects to eligible properties. Additionally, these activities can produce dust, sound, vibration, and other issues that may cause indirect adverse effects to eligible properties. Any adverse impacts from ground disturbing activities, such as access roads, would be permanent, while adverse impacts to setting would likely be temporary from construction activities and long-term from the presence of transmission line structures. Prior to construction, Western would identify any cultural resources in unsurveyed portions of the Project area and avoid any National Register– or California Register–eligible resources or enter into a PA or MOU with the SHPO, as per Project EPMs above. As of April 2015, the only eligible resources currently identified in the Proposed Project area are the California Aqueduct (P-24-001931), the Delta-Mendota Canal (P-39-000089), McCabe Road Bridge (P-24-001934),

and the San Joaquin Pipelines No. 1-3 (P-39-004860). As currently designed, with Project EPMs, no impacts are expected to these resources. If additional National Register– or California Register–eligible resources are identified during preconstruction survey or during construction, resource-specific mitigation measures from the PA/MOU would be implemented to minimize impacts. Therefore, construction of the Proposed Project would not cause significant effects to National Register– or California Register–eligible properties that cannot be satisfactorily mitigated and this impact would be negligible. This impact would be less than significant.

This impact is the same in the North, Central, San Luis, and South segments.

Impact CUL-3 Cause alterations to setting, feeling, or association for a National Register– or California Register-eligible properties.
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Temporary impacts to the setting, feeling, or association of eligible resources may result from construction and operations and maintenance vehicles and increased noise and dust generated during ground disturbances. Long-term, but temporary, impacts to the setting, feeling, or association of historical resources could occur from the presence of structures over the life of the Project. Prior to construction, Western would identify any cultural resources in unsurveyed portions of the project area and avoid any National Register– or California Register–eligible resources or enter into a PA or MOU with the SHPO regarding the treatment of these resources, as per Project EPMs above. As of April 2015, the only eligible resources currently identified in the Proposed Project area are the California Aqueduct (P-24-001931), the Delta-Mendota Canal (P-39-000089), McCabe Road Bridge (P-24-001934), and the San Joaquin Pipelines No. 1-3 (P-39-004860). As transmission lines are already a part of the setting of these resources, an additional line would not likely cause alterations to their integrity of setting, feeling, or association. If additional National Register– or California Register–eligible resources are identified during preconstruction survey or during construction, resource-specific mitigation measures from the PA/MOU would be implemented to minimize impacts. Therefore, construction and O&M of the Proposed Project would not cause substantial alterations to setting, feeling, or association to National Register– or California Register–eligible properties and this impact would be less than significant.

This impact is the same in the North, Central, San Luis, and South segments.

Impact CUL-4 Cause alterations to the setting or feeling of resources of concern to tribal or other interest groups.

The presence of transmission structures and access roads, as well as removal of vegetation, grading, and other construction-related activities could cause alterations to the setting or feeling of resources of concern to tribal or other interest groups. These impacts could be temporary or permanent in nature. At publication, no resources of concern to tribal or other interest groups have been identified within or in the vicinity of the Proposed Project corridor through Western’s consultation efforts or a search of the NAHC Sacred Lands File (see Section 106 Consultation, Chapter 5). Therefore, there would be no adverse effects on such resources. Construction and operations and maintenance of the Proposed Project would not cause alterations of the setting or feeling to resources of concern to tribal or other interest groups. Therefore, under CEQA, there would be no direct or indirect impact.

This impact is the same in the North, Central, San Luis, and South segments.

Impact CUL-5 Cause loss or degradation of a TCP or sacred site, or cause the property or site to be made inaccessible for future use.

The presence of transmission structures and access roads, as well as removal of vegetation, grading, and other construction-related activities could cause loss or degradation of a TCP or sacred site, or cause the property or site to be made inaccessible for future use. These impacts could be temporary or permanent in nature. At publication, no TCPs or sacred sites have been identified within or in the vicinity of the Proposed Project through Western's consultation efforts or a search of the NAHC Sacred Lands File (see Section 106 Consultation, Chapter 5), therefore there would be no adverse effects on such resources. Construction and operations and maintenance of the Proposed Project would not cause loss or degradation of a TCP or sacred site, or cause the property or site to be made inaccessible for future use. Therefore, under CEQA, there would be no direct or indirect impact.

This impact is the same in the North, Central, San Luis, and South segments.

Impact CUL-6 Cause any unmitigated adverse effects to a TCP determined to be National Register-eligible or identified as important to tribes.

The presence of transmission structures and access roads, as well as removal of vegetation, grading, and other construction-related activities could cause unmitigated adverse effects to a TCP determined to be National Register-eligible or identified as important to tribes. These impacts could be temporary or permanent in nature. As of September 2014, no TCPs have been identified within or in the vicinity of the Proposed Project through Western's consultation efforts or a search of the NAHC Sacred Lands File (see Section 106 Consultation, Chapter 5), therefore there would be no unmitigable adverse effects on such resources. Construction and operations and maintenance of the Proposed Project would not cause loss or degradation of a TCP or sacred site, or cause the property or site to be made inaccessible for future use. Therefore, under CEQA, there would be no impact.

This impact is the same in the North, Central, San Luis, and South segments.

Impact CUL-7 Disturb any human remains, including those interred outside of formal cemeteries.

As of April 2015, no human remains or burials have been identified within the Proposed Project corridor, therefore there would be no disturbance to these remains. However, investigation or earth-disturbing activities performed prior to construction could reveal the presence of human remains. Any disturbance of human remains would likely be permanent in duration. With currently available data, construction of the Proposed Project would not disturb any human remains, including those interred outside of formal cemeteries. However, if human remains are encountered, any disturbance would be significant without mitigation.

Mitigation Measures for Impact CUL-7

MM CUL-2 Treatment of inadvertent discovery of human remains. If human remains are encountered, Western's Regional Preservation Official (RPO) and the relevant county coroner shall be notified within 24 hours of the discovery. No further excavation or disturbance of the site or any nearby area reasonably suspected to overlie potential remains shall occur until the relevant county coroner has determined the appropriate treatment and disposition of the human remains. If the coroner determines that the remains are or are believed to be Native American, they will contact the NAHC, who will notify a designated most likely descendant (MLD). The MLD will inspect the site and will determine, in consultation with the property owner and Western's RPO, the disposition of the remains.

Level of Significance After Mitigation

If human remains are encountered, the enactment of Mitigation Measure CUL-2 may render this impact less than significant by following the procedures set up in California law. These procedures would ensure that the remains are minimally damaged, evaluated for their cultural affiliation, documented, and that consultation regarding disposition occurs. In some cases, data contained in the burials will be recovered, if authorized by the descendant community. These actions reduce this impact to a less-than-significant level. However, if the belief system of the descendant community places particular importance on leaving burials undisturbed, this impact may remain significant. It is likely, however, that mitigation would reduce the impact to a less-than-significant level, as described above. This impact would be the same in the North, Central, San Luis, and South segments.

4.5.4 Corridor Alternatives

The majority of resources that were encountered within the alternative corridors were evaluated for their National/California Register–eligibility. The same National Register– or California Register–eligible resources that were identified in the Proposed Project are present in the alternatives. As expressed above in Western’s Project EPMs, cultural resources would be avoided during the siting of new transmission line structures and access roads. Additionally, two resources were identified in the alternative corridors that have not been evaluated for their National Register– or California Register–eligibility.

See Table 4.5-2 for cultural resources present and the survey coverage of the alternative corridors, separated by segment.

Table 4.5-2. Resources and Survey Coverage by Alternative

Alternative	Resources¹ Present	Percent Surveyed	Acres Surveyed	Percent Remaining to be Surveyed
Patterson Pass	2	72	2046.3	28
Butts Road	1	47	477.9	53
West of Cemetery	0	36	424.8	64
West of O’Neill Forebay 70-kV	2	51	536.1	49
San Luis to Dos Amigos	0	55	394.1	45
Billy Wright Road	0	40	159.0	60

¹ – Refers to cultural resources recommended as eligible to the National or California Registers as well as unevaluated resources.
Source: Ballard et al., 2015; Holm et al., 2014b

4.5.4.1 Central Segment

Patterson Pass Road Alternative

As per the Project EPMs, Western would identify and evaluate any cultural resources in unsurveyed portions of the project area prior to construction and would avoid any known cultural resources. If National Register– or California Register–eligible resources are identified within currently unsurveyed areas of the project, construction and O&M activities would avoid them. If adverse effects to National Register– or California Register–eligible resources cannot be avoided, Western would develop a Programmatic Agreement (PA) or Memorandum of Agreement (MOA) in consultation with the SHPO to determine appropriate mitigation to avoid lessen any adverse effects to cultural resources.

As of April 2015, two resources were identified in this alternative corridor that have not been evaluated for eligibility to the National Register and California Register: a multicomponent site consisting of both

prehistoric and historic period elements and a prehistoric site. As part of the Project, prior to construction, Western would evaluate these resources, identify and evaluate any cultural resources in unsurveyed portions of the project area, and avoid any known cultural resources. If cultural resources cannot be avoided, Western will enter into a PA or MOU with the SHPO, as per Project EPMs above. Therefore, during the construction and O&M phases of the Project, Impacts CUL-2 and CUL-3 would be less than significant and there would be no impact under CUL-4 through CUL-6. With implementation of Mitigation Measures CUL-1 and CUL-2, Impacts CUL-1 and CUL-7 would be less than significant during the construction and O&M activities. Impacts to cultural resources from the Patterson Pass Alternative would be similar to those of the Proposed Project.

4.5.4.2 San Luis Segment

Butts Road Alternative

Western would enact its Project EPMs for construction and O&M work, including identification and evaluation of cultural resources in unsurveyed areas. Therefore, during the construction and O&M phases of the Project, Impacts CUL-2 and CUL-3 would be less than significant and there would be no impact under CUL-4 through CUL-6. With implementation of Mitigation Measures CUL-1 and CUL-2, Impacts CUL-1 and CUL-7 would be less than significant during the construction and O&M. Impacts to cultural resources from the Butts Road Alternative would be similar to those of the Proposed Project.

West of Cemetery Alternative

Western would enact its Project EPMs for construction and operations and maintenance work, including identification and evaluation of cultural resources in unsurveyed areas. Therefore, during the construction and O&M phases of the Project, Impacts CUL-2 and CUL-3 would be less than significant and there would be no impact under CUL-4 through CUL-6. With implementation of Mitigation Measures CUL-1 and CUL-2, Impacts CUL-1 and CUL-7 would be less than significant during the construction and O&M phases. Impacts to cultural resources from the West of Cemetery Alternative would be similar to those of the Proposed Project.

West of O'Neill Forebay 70-kV Alternative

Western would enact its EPMs for construction and O&M work, including identification and evaluation of cultural resources in unsurveyed areas. Therefore, during the construction and O&M phases of the Project, Impacts CUL-2 and CUL-3 would be less than significant and there would be no impact under CUL-4 through CUL-6. With implementation of Mitigation Measures CUL-1 and CUL-2, Impacts CUL-1 and CUL-7 would be less than significant during the construction and O&M phases. Impacts to cultural resources from the West of O'Neill Forebay Alternative would be similar to those of the Proposed Project.

4.5.4.3 South Segment

San Luis to Dos Amigos Alternative

Western would enact its Project EPMs for construction and O&M work, including identification and evaluation of cultural resources in unsurveyed areas. Therefore, during the construction and O&M phases of the Project, Impacts CUL-2 and CUL-3 would be less than significant and there would be no impact under CUL-4 through CUL-6. With implementation of mitigation measures CUL-1 and CUL-2, Impacts CUL-1 and CUL-7 would be less than significant during the construction and O&M tasks. Impacts to cultural resources from the San Luis to Dos Amigos Alternative would be similar to those of the Proposed Project.

Billy Wright Road Alternative

Western would enact its Project EPMs for Project construction and O&M work, including identification and evaluation of cultural resources in unsurveyed areas. Therefore, during the construction and O&M phases of the Project, Impacts CUL-2 and CUL-3 would be less than significant and there would be no impact under CUL-4 through CUL-6. With implementation of mitigation measures CUL-1 and CUL-2, Impacts CUL-1 and CUL-7 would be less than significant during the construction and O&M tasks. Impacts to cultural resources from the Billy Wright Road Alternative would be similar to those of the Proposed Project.

4.5.5 No Action/No Project

Under the No Action/No Project Alternative, Western would not construct the SLTP. No new facilities would be built and no ground disturbance would occur. Therefore there would be no new impacts to cultural resources.

4.6 Environmental Justice

4.6.1 Thresholds of Significance

Environmental justice is not a topic considered under CEQA; therefore, there are no CEQA significance criteria for Environmental Justice. The following significance threshold is defined by Executive Order 12898. The Proposed Project and alternatives would have significant, adverse environmental justice effects if any activity associated with their construction or operation would:

- Result in a disproportionate distribution of impacts on minority or low-income populations (Impact EJ-1).

4.6.2 Environmental Protection Measures

There are no EPMs applicable to Environmental Justice.

4.6.3 Proposed Project

Construction

Construction of the Proposed Project could result in a disproportionate distribution of impacts to environmental justice communities associated with each of the issue areas in this EIS/EIR. The following is a discussion of the distribution of minority and low-income population within the Project Area and their relation to the potential environmental impacts that could result from the Proposed Project construction.

Impact EJ-1	Result in a disproportionate negative effect on minority or low-income populations in the Project Area, as defined by Executive Order 12898.
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The study area covers 11 census blocks in portions of Alameda, San Joaquin, Stanislaus, and Merced Counties with a combined minority population of 9,012 (31.7 percent). The North Segment of the Proposed Project crosses one census block group containing a 60 percent minority population (see Table 3.6-1). The Central, San Luis, and South segments of the Proposed Project corridor do not traverse areas that contain high minority populations. On average, the study area has a similar minority population distribution as the region. Therefore, environmental impacts associated with construction of the Proposed Project would not disproportionately affect minority populations in the study area.

The study area contains 2,477 low-income individuals in the workforce or 10.1 percent of the study area population. The Project corridor would not cross census block groups that contain low-income populations greater than 50 percent. Because the potentially affected low-income population accounts for such a small percentage, environmental impacts associated with construction of the Proposed Project would not result in disproportionate adverse impacts to low-income populations in the study area.

Impacts to environmental justice communities could occur during operation and maintenance activities through a disproportional distribution of Project-related social and physical impacts. The work procedures for major repairs, such as replacement of towers or conductors, would be essentially identical to that of new construction. Because adverse impacts from such work would be similar to or less severe in nature and duration than that of new construction as described above, Impact EJ-1 would be short-term and negligible during the operation and maintenance phase of the Proposed Project.

4.6.4 Corridor Alternatives

As illustrated in Figures 3.6-1 and 3.6-2, the corridor alternatives would not result in adverse impacts to environmental justice communities as they do not cross any census blocks with minority or low-income population greater than 50 percent and do not contain a low-income or minority population percentage meaningfully greater than the low-income population percentage in the region.

4.6.5 No Action/No Project Alternative

Under the No Action/No Project Alternative, construction and operation of the San Luis Transmission Project would not occur. Therefore, environmental justice impacts would not occur. Greater rate increases are expected to occur under the No Action/No Project Alternative than under the Proposed Project. Rate increases can have a disproportionate impact on low-income and minority residents.

4.7 Geology, Soils, and Mineral Resources

4.7.1 Thresholds of Significance

The Proposed Project and alternatives would have significant, adverse effects on geology, soils and mineral resources if any activity associated with their construction or operation would result in:

- Exposure of people or structures to potential substantial adverse effects due to slope instability, effects of earthquake (fault rupture, ground shaking, liquefaction, landslide), slumps, rockfalls, or adverse soil conditions such as compressible, expansive, or corrosive soils (Impact GEO-1);
- Substantial soil erosion or the loss of topsoil, including soil loss or accelerated erosion due to disturbance that results in the formation of rills and/or gullies, or that results in sediment deposition in downgradient lands or water bodies to the extent that existing uses cannot be maintained (Impact GEO-2);
- Compaction or mixing of soils that would cause long-term loss of productivity or significantly alter current use or restoration of vegetation (Impact GEO-3);
- Loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan (Impact GEO-4); or
- Placement of a structure on unstable soils which would result in exposure to landslide, lateral spreading, subsidence, liquefaction, or collapse (Impact GEO-5).

4.7.2 Environmental Protection Measures

- Excavated material or other construction materials will not be stockpiled or deposited near or on stream banks, lake shorelines, or other watercourse perimeters.
- Non-biodegradable debris will be collected and removed from the ROW daily and taken to a disposal facility. Slash and other biodegradable debris will be left in place or disposed of appropriately.
- All soil excavated for structure foundations would be backfilled and tamped around the foundations, and used to provide positive drainage around the structure foundations. Excess soil would be removed from the site and disposed of appropriately. Areas around structure footings would be reseeded with native plants.
- Erosion control measures would be implemented to prevent loss of soil. Construction would be in conformance with Western's Integrated Vegetation Management Environmental Guidance Manual.
- At completion of work and at the request of the landowner/manager, all work areas except access roads will be scarified or left in a condition that will facilitate natural or appropriate vegetation, provide for proper drainage, and prevent erosion.
- On completion of the work, all work areas except permanent access roads will be returned to preconstruction conditions unless otherwise specified by the landowner/manager.
- Construction vehicle movement outside of the easement will be restricted (to the extent feasible) to approved access or public roads.
- Where feasible, all construction activities will be rerouted around wet areas while ensuring that the route does not cross sensitive resource areas.
- If wet areas cannot be avoided, Western will use vehicles, ground mats, and equipment that minimize ground impacts.

4.7.3 Proposed Project

The Proposed Project could affect geology, soils, and mineral resources through ground disturbance associated with construction and O&M activities, including operation of heavy equipment, grading and vegetation clearing for access roads, site leveling, auguring of transmission tower foundations, and other infrastructure excavations. These activities would have the potential to cause both direct and indirect adverse effects to geology, soils, and mineral resources.

Mitigation Measures for Impact GEO-1

Impact GEO-1 Expose people or structures to potential substantial adverse effects due to slope instability, effects of earthquake (fault rupture, ground shaking, liquefaction, landslide), slumps, rockfalls, or adverse soil conditions such as compressible, expansive, or corrosive soils.

The Proposed Project does not cross any active earthquake fault zones, landslide zones or liquefaction zones. However, construction and O&M of the Proposed Project could result in adverse direct and indirect effects due to geologic and seismic hazards. If not properly designed and sited, structures and access roads could be constructed on unstable slopes or expansive soils. These geologic and seismic hazards could result in damage or collapse, especially for transmission structures. Unstable slopes and expansive soils could result in movement or failure of structure foundations that could result in hazards to workers or the public, or failure of the transmission line. A preconstruction geotechnical investigation would be required to verify the adequacy of the underlying soils and geologic formations to support structure foundations and to provide a stable road bed. Under CEQA, this impact would be significant without mitigation.

Mitigation Measures for Impact GEO-1

MM GEO-1 Conduct geotechnical investigations and implement project design recommendations. A California-registered Professional Geotechnical Engineer shall evaluate the potential for geotechnical hazards and unstable slopes on the centerline route and areas of new road construction or widening of roads with slopes with more than a 15 percent gradient. Geological hazards shall be evaluated during final design specification for each structure location and road construction area. Project design recommendations will include measures to stabilize and protect Project structures from geologic hazards. Geologically unstable sites will be avoided or stabilized prior to construction. Additionally, expansive soils (such as vertisols) will be avoided or stabilized prior to tower installation.

Level of Significance After Mitigation

In conformance with Mitigation Measure GEO-1, a California-registered Professional Geotechnical Engineer would evaluate the potential for geotechnical hazards and unstable slopes on the centerline route and areas of new road construction or widening of roads with slopes with more than a 15 percent gradient. Geological hazards would be evaluated during final design specification for each structure location and road construction area. Geologically unstable sites would be avoided or stabilized prior to construction. Additionally, expansive soils (such as vertisols) would be avoided or stabilized prior to tower installation. With implementation of MM-GEO-1, this impact would be reduced to a less than significant level.

This impact would be the same in the North, Central, San Luis, and South segments.

Impact GEO-2 Cause substantial soil erosion or the loss of topsoil, including soil loss or accelerated erosion due to disturbance that results in the formation of rills and/or gullies, or that results in sediment deposition in downgradient lands or water bodies to the extent that existing uses cannot be maintained.

Construction of the Proposed Project would include soil-disturbing activities, such as leveling and excavation of the transmission tower sites as well as grading and improvement of existing access roads. This soil disturbance could lead to increased erosion and sedimentation. In conformance with Western's EPMs and Construction Standard 13, erosion control methods would be implemented to prevent loss of soil, all work areas except access roads will be scarified or left in a condition that will facilitate natural or appropriate vegetation, provide for proper drainage, and prevent erosion. Excavated material or other construction materials will not be stockpiled or deposited near or on stream banks, lake shorelines, or other watercourse perimeters. Therefore, sediment-related impacts to downgradient lands or water bodies would be negligible from construction and O&M of the Proposed Project. Under CEQA, this impact would be less than significant.

This impact would be the same in the North, Central, San Luis, and South segments.

Impact GEO-3 Compact or mix soils in a way that would cause long-term loss of productivity or significantly alter current use or restoration of vegetation.

Soils would be compacted and mixed during the creation of tower foundations and access road construction and improvement. In conformance with Western's EPMs and Construction Standard 13, compacted soils from construction activities in hay meadows, alfalfa fields, pastures, and cultivated productive lands will be returned to preconstruction conditions upon completion of the work unless otherwise specified by the land owner/manager. The land and facilities would be restored as nearly as practicable to their original conditions. Areas around structure footings would be reseeded with native plants. Permanently compacted soils would be limited to tower footings and new or improved access and spur roads. After construction, temporary access and spur roads would be restored and revegetated, and the compacted portion of those roads would be limited to the minimum width necessary for operation and maintenance of the Proposed Project. Therefore, impacts to soil productivity or vegetative cover would be negligible due to construction and O&M of the Proposed Project. Under CEQA, this impact would be less than significant.

This impact would be the same in the North, Central, San Luis, and South segments.

Impact GEO-4 Cause a loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan.

Sand and gravel that could be used by the construction industry is found throughout the study area, and three small areas of regionally significant deposits of concrete aggregate would be traversed by the Proposed Project. However, all three of these areas are very narrow at the point where they are traversed by the Proposed Project and it is anticipated that transmission towers and associated infrastructure would be placed outside of these mineral resource recovery sites. Western will coordinate with the affected counties and landowners to ensure that there would be no loss of availability of a locally important mineral resource. The Proposed Project corridor mostly parallels an existing transmission corridor, and does not cross any active mining sites. Therefore, impacts to locally important mineral resource recovery sites would be negligible due to construction of the Proposed Project. Under CEQA, this impact would be less than significant.

This impact would be the same in the North, Central, San Luis, and South segments.

Impact GEO-5 Place a structure on unstable soils, which would result in exposure to landslide, lateral spreading, subsidence, liquefaction, or collapse.

The Proposed Project is not located within any mapped landslide or liquefaction zones. However, without proper design and siting, the Proposed Project could place structures on unstable soils. Improperly designed or sited structures or access roads could trigger landslides. Also, unstable soils could result in movement or failure of structure foundations that could result in hazards to workers or the public, or failure of the transmission line. A preconstruction geotechnical investigation would be required to verify the adequacy of the underlying soils to support structure foundations and to provide a stable road bed. Under CEQA, this impact would be significant without mitigation.

Mitigation Measures for Impact GEO-5

MM GEO-1 Conduct geotechnical investigations and implement project design recommendations.

Level of Significance After Mitigation

In conformance with Mitigation Measure GEO-1, a California-registered Professional Geotechnical Engineer would evaluate the potential for geotechnical hazards and unstable slopes on the centerline route. Areas of new road construction or widening of roads with slopes with more than a 15 percent gradient would be evaluated prior to construction. Geological hazards would be evaluated during final design specification for each structure location. Geologically unstable sites would be avoided or stabilized prior to construction. Additionally, expansive soils (such as vertisols) would be avoided or stabilized prior to tower installation. With implementation of MM-GEO-1, this impact would be reduced to a less than significant level.

This impact would be the same in the North, Central, San Luis, and South segments.

4.7.4 Corridor Alternatives

4.7.4.1 Central Segment

Patterson Pass Road Alternative

This alternative has nine more miles of new access roads and the same number of support structures as the Proposed Project. Due to the increased ground disturbance, this alternative would have greater impacts to geology, soils, and mineral resources as the Proposed Project during construction, operation and maintenance. Direct and indirect impacts for GEO-1 through GEO-5 would be minor. Under CEQA, direct and indirect impacts for GEO-1 and GEO-5 would be less than significant with implementation of mitigation. Direct and indirect impacts for GEO-2 through GEO-4 would be less than significant and no mitigation is required.

4.7.4.2 San Luis Segment

Butts Road Alternative

This alternative corridor would be 0.5 mile longer than the Proposed Project, would have two more support structures, and would increase the need for new access roads by 2 miles. Therefore, soil disturbance would be increased compared to the Proposed Project, and potential impacts to geology,

soils, and mineral resources also would be slightly increased. Direct and indirect impacts for GEO-1 through GEO-5 would be minor. Under CEQA, direct and indirect impacts for GEO-1 and GEO-5 would be less than significant with implementation of mitigation. Direct and indirect impacts for GEO-2 through GEO-4 would be less than significant and no mitigation is required.

West of Cemetery Alternative

This alternative corridor would be 1.2 miles longer than the Proposed Project, would have six more support structures, and would increase the need for new access roads by 9 miles. The terrain would be slightly steeper than the Proposed Project corridor for this segment, which would slightly increase the potential for erosion and landslide. Direct and indirect impacts for GEO-1 through GEO-5 would be minor. Under CEQA, direct and indirect impacts for GEO-1 and GEO-5 would be less than significant with implementation of mitigation. Direct and indirect impacts for GEO-2 through GEO-4 would be less than significant and no mitigation is required.

West of O'Neill Forebay 70-kV Alternative

This alternative is the same length, has the same length of new access roads, and has the same number of support structures as the Proposed Project, and therefore, would have essentially the same impact to geology, soils, and mineral resources during construction, operation and maintenance as the Proposed Project. Direct and indirect impacts for GEO-1 through GEO-5 would be minor. Under CEQA, direct and indirect impacts for GEO-1 and GEO-5 would be less than significant with implementation of mitigation. Direct and indirect impacts for GEO-2 through GEO-4 would be less than significant and no mitigation is required.

4.7.4.3 South Segment

San Luis to Dos Amigos Alternative

This alternative has the same length of new access roads and same number of support structures as the Proposed Project, and therefore would have essentially the same impact to geology, soils, and mineral resources during construction, operation and maintenance. Direct and indirect impacts for GEO-1 through GEO-5 would be minor. Under CEQA, direct and indirect impacts for GEO-1 and GEO-5 would be less than significant with implementation of mitigation. Direct and indirect impacts for GEO-2 through GEO-4 would be less than significant and no mitigation is required.

Billy Wright Road Alternative

This alternative corridor would be 1.5 miles longer than the Proposed Project, would have eight more support structures, and would need 3 miles of additional new access roads. Additionally, the topography of this alternative corridor is slightly steeper than the Proposed Project corridor for this segment, and therefore, the potential for erosion and landslides would be increased slightly. Direct and indirect impacts for GEO-1 through GEO-5 would be minor. Under CEQA, direct and indirect impacts for GEO-1 and GEO-5 would be less than significant with implementation of mitigation. Direct and indirect impacts for GEO-2 through GEO-4 would be less than significant and no mitigation is required.

4.7.5 No Action/No Project

Under the No Action/No Project Alternative, Western would not construct the SLTP. No new facilities would be built, and therefore no impacts to geology, soils, and mineral resources would occur.

4.8 Land Use

4.8.1 Thresholds of Significance

The Proposed Project and alternatives would have significant, adverse effects on land use if any activity associated with their construction or operation would:

- Conflict with applicable land use plans, policies, goals, or regulations (Impact LU-1);
- Conflict with existing utility rights-of-way (Impact LU-2);
- Substantially disrupt or divide the physical arrangements of an established community; or have a substantial adverse effect on the existing character of the vicinity (Impact LU-3);
- Conflict with state or federally established, designated or reasonably foreseeable planned special use areas (e.g., recreation, wildlife management area, game management areas, waterfowl production areas, scientific and natural areas, wilderness areas, areas of critical environmental concern, etc.) (Impact LU-4);
- Result in nuisance impacts attributable to incompatible land uses (Impact LU-5); or
- Result in the permanent conversion of existing land uses (Impact LU-6).

4.8.2 Environmental Protection Measures

- Post proper signage in areas within the easements that will require temporary closure or limited access to accommodate certain land uses. Where feasible, construction activities would be scheduled to minimize impacts to agricultural activities. If this is not feasible and damage occurs, the landowner may be compensated.
- On completion of the work, all work areas except permanent access roads would be returned to preconstruction conditions unless otherwise specified by the landowner/manager.
- During construction, movement would be limited (to the greatest extent feasible) to the access roads and within a designated area in the easements to minimize damage to agricultural land.
- Construction and operations would be conducted in a manner that prevents unnecessary destruction, scarring, or defacing of the natural surroundings to preserve the natural landscape to the extent practicable.
- No permanent discoloring agents would be applied to rocks or vegetation to indicate limits of survey.
- Damaged fences and gates would be repaired or replaced to restore them to their preconstruction condition.

4.8.3 Proposed Project

Impact LU-1 Conflict with applicable land use plans, policies, goals, or regulations.

Transmission Lines

Land use planning for the Proposed Project is described in Sections 3.8.1.1 and 3.8.1.2. The Proposed Project would be constructed adjacent to existing transmission lines in zones that are compatible with utility infrastructure development. The Proposed Project would cross through lands designated as open space or urban reserve in the Villages of San Luis Community Planning area, but these areas are currently

zoned as large-scale agricultural, which allows utility infrastructure development, such as the existing transmission lines in the area; and according to the Villages Community Plan, no zoning changes are currently proposed or planned. The Proposed Project would also cross lands administered by the California Department of Parks and Recreation on either end of Los Banos Creek Reservoir, and an area to the north of the reservoir administered by DWR. The Proposed Project would be located adjacent to existing transmission facilities, which are an allowed use on the state-administered lands.

The Proposed Project would widen the total width of existing utility corridors along the entire route. An additional utility corridor would be compatible with existing agricultural land uses, allowing continued use as farming and ranching lands. The addition of the Proposed Project would effectively reduce the amount of land available for some other types of land uses, especially residential development. Under current planning guidelines, residential development would be an incompatible use within the lands zoned for agricultural use in the four counties affected by the Project. In the near term, therefore, increased residential or commercial development within the area is not anticipated. The Proposed Project would be compatible with adjacent land uses, and would not conflict with land use planning in the Project area. Under CEQA, this would be a less than significant impact.

Substations

Construction and operation of the new Los Banos West Substation would require up to 50 acres within the existing 150-acre Jasper Sears OHV Use Area, which is on land owned by Reclamation and leased to California Department of Parks and Recreation within the San Luis Reservoir State Recreation Area. The proposed substation would not be compatible with the parcels' current designated recreational use under the SLRRLSRA RGMP/GP. Mitigation for impacts to the Jasper Sears OHV Use Area from construction of the proposed Los Banos West Substation could include modification of existing facilities within the OHV Area (Mitigation Measure REC-2 (Modify existing facilities within and relocate, if necessary, the entrance to the Jasper Sears OHV Use Area)). However, implementation of such mitigation would be outside of the jurisdiction of Western and the Authority.. The agencies therefore cannot conclusively determine whether such mitigation is feasible (i.e., capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, and other factors). As such, this impact remains significant and unavoidable. Additionally, refer to Section 4.12 (Recreation) for a discussion of impacts to the Jasper Sears OHV Use Area.

Impact LU-2 Conflict with existing utility rights-of-way.

The Project would add new easements adjacent to existing transmission lines. As standard practice, Western will coordinate with adjacent utility easement holders throughout the final design of the Project to ensure the new lines will not conflict with the existing easements. The Project would therefore have a negligible effect on existing utility rights-of-way. Under CEQA, this impact would be less than significant.

Impact LU-3 Cause substantial disruption or divide of the physical arrangements of an established community; or substantial adverse impact on the existing character of the vicinity

The Proposed Project would mostly travel through sparsely populated rural areas adjacent to existing high-voltage transmission lines. Construction and operation of the Proposed Project would not change allowable land uses within the Project area, such as farming and ranching, which is allowed within the existing transmission line easements. It would not disrupt or divide any community, or have an adverse impact on the existing character of the area. Under CEQA, this impact would be less than significant.

Impact LU-4	Conflict with state or federally established, designated or reasonably foreseeable planned special use areas (e.g., recreation, wildlife management area, game management areas, waterfowl production areas, scientific and natural areas, wilderness areas, areas of critical environmental concern, etc.).
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Transmission Lines

The Proposed Project crosses over recreation lands and wildlife management areas near the San Luis Reservoir and O'Neill Forebay complex, and the Los Banos Creek Reservoir. Impacts to recreation are discussed in Section 4.12. The Proposed Project would also cross two ranches just north of the San Luis Reservoir that are under conservation easement, partially as mitigation that arose from a consultation with the U.S. Bureau of Reclamation and the California State Water Resources Control Board. The Proposed Project would be located adjacent to existing transmission lines, which are an existing and allowed use in all areas of the Project. The Project would not block movement of people and animals through these lands, and would not conflict with the land management objectives of the administering agency. Therefore, construction or operation of the Proposed Project would not conflict with any state or federal special land use area. Under CEQA, this impact would be less than significant.

Substations

As described under Impact LU-1, construction and operation of the new Los Banos West Substation would not be compatible with the parcels' current designated recreational use under the SLRRLSRA RGMP/GP. Mitigation for impacts to the Jasper Sears OHV Use Area from construction of the proposed Los Banos West Substation could include modification of existing facilities within the OHV Area (Mitigation Measure REC-2 (Modify existing facilities within and relocate, if necessary, the entrance to the Jasper Sears OHV Use Area)). However, implementation of such mitigation would be outside of the jurisdiction of Western and the Authority. The agencies therefore cannot conclusively determine whether such mitigation is feasible. As such, this impact remains significant and unavoidable. Additionally, refer to Section 4.12 (Recreation) for a discussion of impacts to the Jasper Sears OHV Use Area.

Impact LU-5	Result in nuisance impacts attributable to incompatible land uses.
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The Project is mostly compatible with land uses within and adjacent to the proposed corridors. The Project would not emit substantial light or glare (see Section 4.15). Noise impacts are discussed in Section 4.9.

Impact LU-6	Result in the permanent conversion of existing land uses.
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Under Western's EPMs, work areas would be returned to preconstruction conditions unless otherwise specified by the landowner/manager. Damaged fences, gates or other structures would be repaired or replaced. Therefore, permanent conversion of existing land uses would not occur. Under CEQA, this impact is less than significant.

4.8.4 Corridor Alternatives

4.8.4.1 Central Segment

Patterson Pass Alternative

This alternative route is adjacent to the Proposed Project Route in the Central Segment. Land use impacts and CEQA significance determinations would be the same as the Proposed Project.

4.8.4.2 San Luis Segment

Butts Road Alternative

This alternative route is on the west side of O'Neill Forebay and runs through the same two land use planning zones (Agriculture and Foothill Pasture) as the Proposed Project. Land use impacts and CEQA significance determinations would be the same as the Proposed Project.

West of Cemetery Alternative

This alternative would be in lands zoned as Foothill Pasture. Transmission line development is compatible with this zone, as pasture use could continue post-construction. It would avoid encroachment on the residential and wildlife preserve land uses on the east side of O'Neill Forebay, but it would encroach on recreational uses on the west side of the Forebay, and on the San Joaquin Valley National Cemetery. Overall, impacts to land use would be similar to that of the Proposed Project in type and context; however, the duration and intensity would likely be greater than the Proposed Project because this alternative would encroach on recreation and national cemetery lands. The CEQA significance determinations would be the same as the Proposed Project.

West of O'Neill Forebay 70-kV Alternative

This alternative would be closer to important recreation uses on the west side of the O'Neill Forebay and to the San Joaquin Valley National Cemetery, but would be farther away from the Village of Santa Nella and a wildlife refuge on the east side of the Forebay. Overall, impacts to land use would be similar to that of the Proposed Project in type and context; however, the duration and intensity would likely be greater than the Proposed Project because this alternative would encroach on recreation and national cemetery lands. The CEQA significance determinations would be the same as the Proposed Project.

4.8.4.3 South Segment

San Luis to Dos Amigos Alternative

This alternative is adjacent to the Proposed Project route in the South Segment. Land use impacts and CEQA significance determinations would be the same as the Proposed Project.

Billy Wright Road Alternative

This alternative would travel through lands zoned as Exclusive Agriculture and Urban Reserve within the Villages of Laguna San Luis, and then into lands zoned as Foothill Pasture for the remainder of the route. It would encroach on recreation lands to the west of Los Banos Creek Reservoir. Overall, impacts to land use would be similar to that of the Proposed Project in type and context. Overall, impacts to Land Use would be similar to that of the Proposed Project. The CEQA significance determinations would be the same as the Proposed Project.

4.8.5 No Action/No Project

Under the No Action/No Project Alternative, Western would not construct the SLTP. There would be no impacts to land use.

4.9 Noise and Vibration

4.9.1 Thresholds of Significance

The Proposed Project and alternatives would have significant noise impacts if any activity associated with their construction, operation, or maintenance would result in:

- A substantial temporary or periodic increase in ambient noise levels (above 5 dBA Leq) at sensitive receptor locations above levels existing without the Project (Impact NOISE-1);
- A substantial permanent increase in ambient noise levels (above 5 dBA Leq) at sensitive receptor locations above levels existing without the Project (Impact NOISE-2);
- Noise levels that exceed applicable local or federal noise regulations or guidelines (Impact NOISE-3);
- Excessive groundborne vibration or groundborne noise levels at sensitive receptor locations (Impact NOISE-4).

A 3 dBA change is the minimum change in environmental noise that is perceptible to the human ear. An increase in noise levels of more than 5 dBA Leq is considered to be a substantial increase and a significant impact.

4.9.2 Environmental Protection Measures

- All vehicles and equipment would be equipped with required exhaust noise abatement suppression devices.

4.9.3 Proposed Project

Overview of Construction Noise

Analyzing construction noise impacts involves three factors: the amplitude of noise generated by various pieces of construction equipment, the timing and duration of noise-generating activities, and the relative location of noise-sensitive areas. Noise impacts are considered more severe if they occur in early morning, evening, or nighttime hours; if the construction occurs adjacent to noise-sensitive land uses (receptors); or if construction continues over extended periods of time. Construction of the Proposed Project would be completed within about 18 months, and construction noise in any one area would generally be limited to about 1 to 2 weeks duration.

Construction of the Proposed Project would involve the short-term use of heavy equipment such as cranes, drill rigs, dozers, excavators, compressors, generators, and trucks. Helicopters would also be needed to transport construction materials and to string the conductors for the transmission line. Construction of foundations for new towers would require use of a drill rig or large auger for the cast-in-place piles at each tower location. Spur roads and access roads would require use of graders, dozers, and trucks.

Noise levels associated with individual pieces of equipment would generally range between 70 and 90 dBA (U.S. DOT, 1995). Noise levels for typical pieces of construction equipment (at 50 feet from the noise source) are listed in Table 4.9-1.

Construction noise is usually made up of intermittent peaks and continuous lower levels of noise from active equipment. At any one location, a combination of multiple pieces of equipment may be present, and aggregated peak noise levels of up to about 100 dBA Lmax could occur within 50 feet from the construction activity. At 100 feet, the distance would attenuate these peak levels to about 94 dBA Lmax, and at 200 feet, the noise would attenuate to approximately 88 dBA Lmax. These short peaks would attenuate further to about 76 dBA Lmax for locations at 800 feet with an unobstructed line of sight. Over a typical day, average noise levels from construction would be lower than the intermittent peaks because most equipment would not be operated steadily or continuously at peak levels. At 50 feet, continuously steady construction noise levels would average approximately 77 dBA Leq. At 100 feet, these average levels would attenuate to 71 dBA Leq, and to 65 dBA Leq at 200 feet. These noise levels would diminish over additional distance and would be reduced further by any intervening structures.

Table 4.9-1. Typical Noise Levels for Construction Equipment

Equipment	Typical Noise Levels (dBA, at 50 feet)
Front loaders	85
Backhoes, excavators	80-85
Tractors, dozers	83-89
Graders, scrapers	85-89
Trucks	88
Concrete pumps, mixers	82-85
Cranes (movable)	83
Cranes (derrick)	88
Forklifts	76-82
Pumps	76
Generators	81
Compressors	83
Pneumatic tools	85
Jack hammers, rock drills	98
Pavers	89
Compactors	82
Drill rigs	70-85

Source: Adapted from U.S. DOT, 1995

Impact NOISE-1 Result in a substantial temporary or periodic increase in ambient noise levels (above 5 dBA Leq) at sensitive receptor locations above levels existing without the Project.

Two types of short-term noise impacts would occur during construction of the Proposed Project. The first type would be due to noise along area roadways from construction crew commutes and the transport of construction equipment and materials to the Proposed Project site. These trips would incrementally raise noise levels on roads leading to the various staging areas and work sites. The pieces of heavy equipment for grading and construction activities would be moved on site and remain for the duration of construction, and would therefore add to temporary rather than permanent daily traffic volumes in the Proposed Project vicinity. A high single-event noise exposure potential at a maximum temporary level of 88 dBA Lmax from trucks passing at 50 feet may occur. However, the projected construction traffic noise would be sporadic and would be of the same nature as existing traffic noise that occurs along area roadways, including I-5, I-205, I-580 and several state highways and local roads. For areas near existing highways or other main roads, daytime intermittent construction traffic would produce an increase of less than 1 dBA Leq when compared with the existing long-term traffic noise level. Therefore, short-term construction-related worker commutes and equipment transport noise impacts would be minor and would not cause a substantial temporary or periodic increase in ambient noise levels in the region. This impact would be less than significant. This impact would be the same in the North, Central, San Luis, and South segments.

The second type of short-term noise impact is related to noise generated during construction of the Proposed Project. Table 4.9-1, Typical Noise Levels for Construction Equipment, lists typical construction equipment noise levels (Lmax), at 50 feet from the equipment.

Substation Construction

Construction of new substations and grading and surface improvements of the existing substations would generate the highest noise levels (compared to other construction activities) because, typically, earthmoving equipment is the noisiest construction equipment. Construction noise for the SLTP was not modeled to predict exact noise levels. However, comparison to other projects shows that maximum noise levels from similar substation work would typically be approximately 100 dBA (Lmax) at the substation property line (50 feet from the noise source). As described above, continuously steady construction noise levels would average approximately 77 dBA Leq (50 feet). At 100 feet, these average levels would attenuate to 71 dBA Leq, and to 65 dBA Leq at 200 feet.

The nearest sensitive receptor to the new Tracy East and Los Banos West Substations, and the existing Tracy, Los Banos and Dos Amigos Substations is approximately 600 feet away from the substations. There are no sensitive receptors within 1 mile of the San Luis Substation, though day-use recreation users are nearby at the O'Neill Forebay and San Luis Reservoir. Noise from earthmoving equipment within the substations would attenuate to approximately 55 to 57 dBA Leq (or ambient levels) at the nearest sensitive receptor. The resulting noise levels would be comparable to and not greater than 5 dBA Leq over existing background daytime levels, which are likely to be between 55 and 60 dBA Leq for the receptors nearest to the substation sites and the area roadways accessing the sites. Construction noise impacts associated with proposed substation construction and improvements would be minor and temporary. This impact would be less than significant. This impact would be the same for all substations affected by the Proposed Project.

Transmission Line Construction

New transmission system construction, access road construction, and pulling operations all generate noise. Helicopter use would generate the highest noise levels. Earth moving activities associated with access road work and site preparation tasks would generate the next highest noise levels (compared to other construction activities).

Helicopters may be used for delivery of equipment and materials from staging yards to structure sites, structure placement, hardware installation, and conductor or ground wire stringing operations. Noise information is available for the Bell 500 (MD 500) and Kaman Kmax; these are comparable to the Hughes 500, which would be used in construction of the Proposed Project. The reference noise level for the Bell 500 for hovering is 95.9 dBA Lmax at 100 feet. The reference noise level for the Kaman Kmax for hovering is 84.0 dBA Lmax at 250 feet. The total time within any given hour of the day that the helicopter will be used at one location is approximately 15 minutes, though a helicopter may travel back and forth multiple times within that hour at a given tower site location. Helicopter operations would be limited to the Proposed Project area, including staging areas, ground locations in close proximity to conductor or ground wire pulling, tensioning, and splice sites. Helicopter use and other noise-generating activities would not likely take place concurrently at the same location. Generally, helicopters would be used only in inaccessible areas of the Project, which have no sensitive receptors nearby.

Typical equipment used for earth-moving activities include a grader, a dozer, and a compactor. As described above, a combination of multiple pieces of equipment may be present, and aggregated peak noise levels of up to about 100 dBA Lmax could occur within 50 feet from the construction activity. However, continuously steady construction noise levels would average approximately 77 dBA Leq at 50 feet. At 100 feet, these average levels would attenuate to 71 dBA Leq, and to 65 dBA Leq at 200 feet. The nearest sensitive receptor is approximately 370 feet (0.07 mile) from the Proposed Project corridor; there are several more within 500 feet (e.g., residences near Sullivan Road, Butts Road, McCabe Road,

Billy Wright Road, Arburua Road). Even with noise abatement suppression devices, construction would likely result in more than a 5 dBA increase above ambient noise levels at sensitive receptors near the proposed corridor. However, construction noise in any one area would generally be limited to about 1 to 2 weeks duration. This short-term impact would be significant.

Routine maintenance activities could include driving or flying along the transmission line corridor to inspect the facilities, repaint towers, and manage vegetation. Increases in ambient noise from occasional vehicle traffic or helicopter overflights would be negligible and of short duration. Occasionally major maintenance activities, such as tower replacement or reconductoring, may be needed in the future. These activities can create noise that is similar in nature and intensity to that of new construction, albeit at a smaller scale than construction of the Proposed Project.

Mitigation Measures for Impact NOISE-1

MM NOISE-1 Provide construction notification. Notice shall be mailed no less than 15 days prior to construction to all residents, property owners, businesses, and public agencies that have facilities within 500 feet of the project area. The notice shall state the type of construction activities that will be conducted, and the location and duration of construction.

MM NOISE-2 Implement Best Management Practices for construction noise. Western shall implement the following noise-suppression techniques during construction and major maintenance activities to avoid violations of local noise ordinances and minimize exposure of noise-sensitive receptors.

- Confine construction noise to daytime, weekday hours (7:00 AM to 7:00 PM) or an alternative schedule established by the local jurisdiction or land manager in areas within 1,000 feet of a sensitive receptor.
- All vehicles and equipment would be equipped with noise suppression devices that are no less effective than those originally installed by the manufacturer.
- Place construction equipment and route construction traffic away from sensitive receptors where feasible.
- Minimize unnecessary construction vehicle use and idling time.

Level of Significance after Mitigation

Implementation of Mitigation Measure NOISE-1 would reduce construction noise to the extent feasible by physically suppressing the noise or confining it to times/days and locations with the least potential for impact. Mitigation Measure NOISE-2 would alert sensitive receptors to upcoming construction noise with adequate time to make arrangements to limit their exposure to the noise (e.g., by leaving or avoiding the area during times of construction). Together, these measures would reduce this impact, but temporary or periodic noise increases may still occur at levels greater than 5 dBA Leq over existing background daytime levels at the sensitive receptors within about 500 feet of the proposed corridor. This short-term impact would be significant and unavoidable. This impact would be the same in the North, Central, San Luis, and South segments.

Impact NOISE-2 Result in a substantial permanent increase in ambient noise levels (above 5 dBA Leq) at sensitive receptor locations above levels existing without the Project.

Corona noise would be generated during operation. For transmission lines, corona is the electrical breakdown of air into charged particles caused by the electrical field on the surface of conductors. It is generally characterized as a crackling/hissing noise. The noise level from corona is proportional to the strength of the line electric field during operation. In general, corona-related noise is audible only during wet weather from lines operated at 345-kV or higher. A study by the Electric Power Research Institute (EPRI, 1982) showed that fair weather audible noise from modern transmission lines of less than 500-kV is indistinguishable from background noise at the edge of a 100-foot ROW; the proposed 500-kV ROW would be 200 to 250 feet wide. Therefore, the Project would have negligible corona noise effects during operations. This impact would be less than significant. This impact would be the same in the North, Central, San Luis, and South segments.

Impact NOISE-3 Result in noise levels that exceed applicable local or federal noise regulations or guidelines.

Noise attenuates quickly with distance from the source. A combination of multiple pieces of equipment may be present, and aggregated peak noise levels of up to about 100 dBA Lmax could occur within 50 feet from the construction activity. However, continuously steady construction noise levels would average approximately 77 dBA Leq (50 feet). At 100 feet, these average levels would attenuate to 71 dBA Leq, and to 65 dBA Leq at 200 feet. Temporary construction activities would be limited to 1 to 2 weeks at any one location along the transmission line. Substation construction would be much longer and would fluctuate in duration and noise intensity. The resulting noise level would not exceed the EPA or State of California noise guidelines shown in Section 3.9.1.2; however, depending on the site-specific proximity of residences, it could exceed the noise standards established by each county for compatibility with residential land use (i.e., Merced, San Joaquin, and Stanislaus) identified in Table 3.9-3 for the closest sensitive receptors identified in Section 3.9.1.1. Noise standards established in each county could also be exceeded in the unlikely case that helicopter use is necessarily close to residences. Therefore, this short-term impact would be significant.

Mitigation Measures for Impact NOISE-3

MM NOISE-1 Provide construction notification.

MM NOISE-2 Implement Best Management Practices for construction noise.

Level of Significance after Mitigation

As with Impact NOISE-1, implementation of Mitigation Measures NOISE-1 and NOISE-2 would reduce construction noise and alert sensitive receptors to upcoming construction noise. Together, these measures would reduce this impact, but construction noise may still exceed local regulations or guidelines at the closest sensitive receptors. Although the construction noise would be temporary and periodic at each location, this impact would be significant and unavoidable during construction. This impact would be the same in the North, Central, San Luis, and South segments.

Impact NOISE-4 Result in excessive groundborne vibration or groundborne noise levels at sensitive receptor locations.

No vibration-sensitive land uses occur in the Project vicinity. As such ground vibration impacts in the context of this Project area are those that may result in nuisance, annoyance or structural damage. A

large dozer, which is the piece of equipment that would cause the greatest groundborne vibration and groundborne noise levels, has levels of 0.089 in/sec peak particle velocity (PPV) and 87 VdB at 25 feet (FTA, 2006). This would not exceed Caltrans's thresholds of 0.1 in/sec PPV for prevention of structural damage for fragile buildings (Jones and Stokes, 2004) or FTA's maximum acceptable level of 80 VdB for human response at residences (i.e., annoyance) (FTA, 2006). Therefore, construction and operation of the Proposed Project would not expose sensitive receptors to excessive groundborne vibration or groundborne noise levels. Under CEQA, this impact would be less than significant. This impact would be the same in the North, Central, San Luis, and South segments.

4.9.4 Corridor Alternatives

4.9.4.1 Central Segment

Patterson Pass Road Alternative

This alternative has the nine more miles of new access roads and same number of support structures as the Proposed Project, and therefore would cause essentially the same noise during construction, operation and maintenance as the Proposed Project. It would be located on the west side of the existing transmission line corridor rather than on the east side, and therefore would be farther away from most of the residences along the Proposed Project corridor. For example, the houses off the end of South Tracy Boulevard, on Sullivan Road and on Butts Road under this alternative would be approximately 500 feet farther away from construction activities as compared to the Proposed Project. However, it would be closer to the residences south of Patterson Pass Road. Impacts NOISE-1 through NOISE-4 would be the same as described for the Proposed Project in context, type, and duration; however, the intensity would be slightly less because it would be further away from the residences. Nonetheless, CEQA impact significance determinations and mitigation measures for this alternative would be the same as those described for the Proposed Project.

4.9.4.2 San Luis Segment

Butts Road Alternative

This alternative corridor would be 0.5 mile longer than the Proposed Project, would have two more support structures, and would increase new access roads by 2 miles. The noise created by construction, operation, and maintenance of this alternative would be similar to that of the Proposed Project. This alternative corridor is closer to a group of houses off McCabe Road, and closer to important recreation facilities on the O'Neil Forebay, which are as close as about 1,700 feet from this alternative corridor. This alternative would also be closer to the San Joaquin Valley National Cemetery. Impacts NOISE-1 through NOISE-4 would be the same as described for the Proposed Project in type and context; however, the duration and intensity would likely be slightly greater than the Proposed Project due to longer length of the corridor and new access roads. This alternative would have noise effects on a greater number of receptors than the Proposed Project. CEQA impact significance determinations and mitigation measures are the same as those described for the Proposed Project.

West of Cemetery Alternative

This alternative corridor would be 1.2 miles longer than the Proposed Project, would have six more support structures, and would increase new access roads by 9 miles. It would be located closer to the San Joaquin Valley National Cemetery and the residence nearby. Impacts NOISE-1 through NOISE-4 would be the same as described for the Proposed Project in type and context; however, the duration

and intensity would likely be slightly more than the Proposed Project due to increased number of support structures and length of corridor and new access roads. CEQA impact significance determinations and mitigation measures are the same as those described for the Proposed Project.

West of O'Neill Forebay 70-kV Alternative

This alternative is the same length, has the same length of new access roads, and has the same number of support structures as the Proposed Project, and therefore would generate similar noise during construction, operation and maintenance as the Proposed Project. No residences are in the area of this alternative corridor, though it is closer to important recreation facilities on the O'Neil Forebay, which are as close as approximately 1,700 feet from this alternative corridor. This alternative would also be closer to the San Joaquin Valley National Cemetery than the Proposed Project. Although different sensitive receptors would be affected, impacts NOISE-1 through NOISE-4 would be the same as described for the Proposed Project. CEQA impact significance determinations and mitigation measures are the same as those described for the Proposed Project.

4.9.4.3 South Segment

San Luis to Dos Amigos Alternative

This alternative is the same length, has the same length of new access roads and same number of support structures as the Proposed Project, and therefore would cause essentially the same noise during construction, operation and maintenance as the Proposed Project. Four houses are located near this alternative corridor near Billy Wright Road. One is 200 feet to the east of the Proposed Project corridor, and another is 200 feet to the west of this alternative corridor. Another, which may not be occupied, is 300 feet away, and the fourth is 2,500 feet to the east side of the Proposed Project corridor. This alternative would reduce noise effects for two or three residences and increase effects for one residence. Impacts NOISE-1 through NOISE-4 would be the same as described for the Proposed Project. CEQA impact significance determinations and mitigation measures are the same as those described for the Proposed Project.

Billy Wright Road Alternative

This alternative corridor would be 1.5 miles longer than the Proposed Project, would have eight more support structures, and would increase new access roads by 3 miles. The noise generated during construction, operation and maintenance from this alternative would be similar to that of the Proposed Project in type and context; however, the duration and intensity would likely be slightly more than the Proposed Project due to greater number of support structures and length of corridor and new access roads. Much of this alternative traverses less developed terrain and therefore is adjacent to fewer residences. Similar to that of the Proposed Project, this alternative traverses the Los Banos Creek Reservoir. However, the portion of the recreation area traversed by the alternative as opposed to the portion traversed by the Proposed Project contains fewer established recreation sites and would therefore result in slightly less impacts to sensitive receptors. CEQA impact significance determinations and mitigation measures are the same as those described for the Proposed Project.

4.9.5 No Action/No Project

Under the No Action/No Project Alternative, Western would not construct the SLTP. No new facilities would be built and no emissions would occur; therefore, there would be no impacts to noise.

4.10 Paleontological Resources

4.10.1 Thresholds of Significance

The Proposed Project and alternatives would have significant, adverse effects on paleontological resources if any activity associated with their construction or operation would:

- Result in the loss of or inaccessibility to scientifically important paleontological resources (Impact PALEO-1).

4.10.2 Environmental Protection Measures

- Before construction, all construction personnel will be instructed by Western on the protection of cultural and paleontological resources and that cultural and paleontological resources might be present in the study area. To assist in this effort, the construction contract will address applicable federal and state laws regarding cultural and paleontological resources, including historic and prehistoric resources, and fossils. Construction personnel will be informed of the penalties for collection and removal of such resources, as well as the importance of these resources and the purpose and necessity of protecting them. Contractors will be trained to stop work near any discovery and notify Western's regional environmental manager immediately, who will ensure that the resource is evaluated and avoided. Known cultural and paleontological resources will be flagged for avoidance and a minimum distance maintained for work disturbances.

4.10.3 Proposed Project

This section is based on the information provided in the Paleontological Resources Report, which is included as Appendix G.

Based on the results of a literature review and museum records search conducted through the University of California Museum of Paleontology (UCMP), the geologic units underlying the Proposed Project study area have a paleontological resource potential ranging from low to high in accordance with the Society of Vertebrate Professionals (SVP) (2010) and BLM's Potential Fossil Yield Classification (PFYC) system (2008). The Panoche, Moreno, Oro Loma, Briones, Neroly, and Tulare Formations, as well as the Quaternary older alluvium, are considered to have a high paleontological resource potential, equivalent to PFYC Class 4, because they have proven to yield vertebrate fossils near the Project study area and throughout California. Although the UCMP contains no vertebrate localities for the Kreyenhagen, Domengine, and Cierbo Formations within Alameda, San Joaquin, Stanislaus, or Merced Counties, these units have yielded intermittent vertebrate localities elsewhere in California; as such, they are assigned to PFYC Class 3 (moderate paleontological resource potential). The Tesla Formation and Laguna Seca Formations are assigned a low paleontological resource potential (PFYC Class 2); although they contain a number of invertebrate localities, they have not yielded significant vertebrate fossils. The portions of the Project near the flatlands on the edge of the Central Valley are on Holocene age alluvial deposits. Holocene deposits have a low paleontological resource potential recommendation (PFYC Class 2) because they are generally too young to preserve fossilized remains. However, these alluvial deposits may shallowly overlie older intact fine-grained Pleistocene-age sediments. Therefore, their paleontological resource potential is low to high, increasing with depth.

Impact PALEO-1 Result in the loss of or inaccessibility to scientifically important paleontological resources.

In general, the potential for a given project to result in negative impacts to paleontological resources is directly proportional to the amount of ground disturbance associated with the project. Since this Project entails construction of a new transmission line, new ground disturbances are anticipated. Consequently, the likelihood of adversely affecting scientifically significant fossils during Project development is high in sensitive areas. The following mitigation measures were developed in accordance with the standardized guidelines developed by SVP and BLM for treatment of paleontological resources and are consistent with the requirements of NEPA and CEQA.

Mitigation Measures for Impact PALEO-1

MM PALEO-1 Conduct pre-construction survey. A qualified paleontologist will be retained to conduct a field reconnaissance survey of the Project area prior to any ground-disturbing activities. Any required permits will be obtained prior to the survey. Survey areas will include the entire corridor right-of-way, plus any additional easements, such as for substations, work or storage areas, or access roads. The purpose of the field survey will be to visually inspect the ground surface for exposed fossils or traces thereof and to evaluate geologic exposures for their potential to contain preserved fossil material at the subsurface. Only Project areas (as defined above) classified as having a PFYC Class 3 or higher will be subject to a pedestrian survey. Particular attention will be paid to rock outcrops, both inside and in the vicinity of the Project area, where accessible, and any areas where geologic sediments are well exposed. Areas determined to have a PFYC Class 1 or 2, or areas that are heavily disturbed or otherwise obscured by heavy vegetation will not require a field survey. Where possible, activities and structures should be located in areas of lower sensitivity for encountering paleontological resources.

MM PALEO-2 Document all finds. All fossil occurrences observed during the course of fieldwork, significant or not, will be documented and recorded at the time of discovery. The data collected for each fossil occurrence should include, at a minimum, the following information: Universal Transverse Mercator (UTM) coordinates, approximate elevation, description of taxa, lithologic description, and stratigraphic context (if known). In addition, each locality will be photographically documented with a digital camera. If feasible, with prior consent of the landowner(s), all significant or potentially significant fossils will be collected at the time they are observed in the field. If left exposed to the elements, fossil materials are subject to erosion and weathering. If the fossil discovery is too large to collect during the survey (e.g., a dinosaur skeleton or bone bed) and requires a large-scale salvage effort, then it will be documented and a mitigation strategy will be devised pursuant to SVP (2010) guidelines.

MM PALEO-3 Conduct Worker Environmental Awareness Training. Prior to the start of Project activities, all field personnel will receive worker's environmental awareness training on paleontological resources. The training will provide a description of the fossil resources that may be encountered in the Project area, outline steps to follow in the event that a fossil discovery is made, and contact information for the Project Paleontologist and on-site monitor(s). The training will be developed by the Project Paleontologist and may be conducted concurrent with other environmental training (e.g., cultural and natural resources awareness training, safety training, etc.).

MM PALEO-4 Conduct paleontological mitigation monitoring. Prior to the commencement of ground-disturbing activities, a qualified and professional paleontologist will be retained to prepare and implement a Paleontological Resource Mitigation Plan for the Project. Initially, full-time monitoring will be required during ground-disturbing activities in the areas of the Project with a recommended paleontological resource potential of Class 4 or higher (i.e., Panoche Formation, Moreno Formation, Oro Loma Formation, Briones Formation, Neroly Formation, Tulare Formation, and Quaternary older alluvium). Part-time monitoring or spot checking will occur in areas of the Project underlain by geologic units with a recommended paleontological resource potential of Class 3. In addition, spot checking will also occur in Project areas underlain by Quaternary alluvial deposits in order to determine if underlying sensitive geologic units are being impacted by construction, and at what depth.

Monitoring will entail the visual inspection of excavated or graded areas and trench sidewalls. In the event that a paleontological resource is discovered, the monitor will have the authority to temporarily divert the construction equipment around the find until it is assessed for scientific significance and collected. Monitoring will include matrix screening for the presence of microfossils and the frequency of which will be determined by the Project Paleontologist.

Monitoring is largely a visual inspection of sediments; therefore, the most likely fossils to be observed will be macrofossils of vertebrates (bones, teeth, tusk) or invertebrates (shells). At the discretion of the Project Paleontologist, the monitor will periodically screen sediments to check for the presence of microfossils that can be seen with the aid of a hand lens (i.e., microvertebrates). Should microvertebrate fossils be encountered during the screening process, then bulk matrix samples will be taken for processing off site. For each fossiliferous horizon or paleosol, a standard sample (4.0 cubic yards or 6,000 pounds) will be collected for subsequent wet-screening per SVP (2010) guidelines.

MM PALEO-5 Procedures for fossil preparation, curation, and reporting. Upon completion of fieldwork, all significant fossils collected will be prepared for curation. Preparation will be done in a properly equipped paleontology laboratory and will include the removal of excess matrix from fossil materials, and stabilizing and repairing specimens, as necessary. Following laboratory work, all fossil specimens will be identified to the lowest taxonomic level, cataloged, analyzed, and curated. The fossil specimens must be delivered to the accredited museum repository identified on the permit and receipt(s) of collections will be submitted to Western. This delivery will be made as soon as practical but no later than 60 days after all fieldwork is completed. The cost of curation is assessed by the repository and will be the responsibility of Western.

At the conclusion of laboratory work and museum curation, a Paleontological Mitigation Report will be prepared describing the results of the paleontological mitigation monitoring efforts associated with the Project. The report will include a summary of the field and laboratory methods, an overview of the Project area geology and paleontology, a specimen inventory of all taxa recovered (if any), an analysis of fossils recovered (if any) and their scientific significance, the signed receipt of confirmation of museum deposition, and recommendations. The report will be submitted to the designated repository, Western, and any other interested state or federal agencies involved within 45 days following completion of monitoring and laboratory work.

Level of Significance after Mitigation

Mitigation Measures PALEO-1, PALEO-2, PALEO-3, and PALEO-4 requires that all paleontological resources be identified prior to ground disturbing activities, thoroughly documented and that workers be informed regarding their presence and protection. Implementation of these measures would avoid and minimize impacts to any inadvertent discoveries of paleontological resources. Mitigation Measure PALEO-5 would require preparation, curation and reporting for any discovered resources. In combination, these mitigation measures would reduce impacts to paleontological resources to a less than significant level.

4.10.4 Corridor Alternatives

Alternative corridors travel through similar geological units and formations, and would have similar potential to create impacts to Paleontological Resources as the Proposed Project. Intensity of impacts would essentially be proportional to the number of support structures for each route.

4.10.4.1 Central Segment

The Patterson Pass Road Alternative would have the same number of structures as the Proposed Project, and be within the same geological units, and therefore would have the same impacts on paleontological resources as the Proposed Project. With the implementation of Western's standard EPMs, construction standards, and Mitigation Measures PALEO-1 through PALEO-5, impacts to Paleontological Resources would be minor. CEQA determinations would be the same as for the Proposed Project.

4.10.4.2 San Luis Segment

The Butts Road Alternative would have two more structures than the Proposed Project, and the West of Cemetery Alternative would have six more. Impacts to Paleontological Resources from either of these alternatives would be similar to that of the Proposed Project in type and context but greater in the duration and intensity due to greater number of support structures and length of new access roads. With the implementation of Western's standard EPMs, construction standards, and Mitigation Measures PALEO-1 through PALEO-5, impacts to Paleontological Resources would be minor. CEQA determinations would be the same as for the Proposed Project.

4.10.4.3 South Segment

The San Luis to Dos Amigos Alternative would have the same number of structures as the Proposed Project, and be within the same geological units, and therefore would have equal effect on Paleontological Resources. The Billy Wright Road alternative would have eight more structures and 3 more miles of access road than the Proposed Project. Impacts to Paleontological Resources from the Jasper Sears Road alternative would be similar to that of the Proposed Project in type and context but greater in the duration and intensity due to greater number of support structures and length of new access roads. With the implementation of Western's EPMs, construction standards, and Mitigation Measures PALEO-1 through PALEO-5, impacts to Paleontological Resources would be minor. CEQA determinations would be the same as for the Proposed Project.

4.10.5 No Action/No Project

Under the No Action/No Project Alternative, Western would not construct the SLTP. No new facilities would be built, and therefore there would be no direct or indirect impacts to paleontological resources.

4.11 Public Health and Safety

4.11.1 Thresholds of Significance

The Proposed Project and alternatives would have significant, adverse effects on public health and safety if any activity associated with their construction or operation would:

- Interfere with emergency response capabilities or resources (Impact H&S-1);
- Create worker health hazard(s) beyond limits set by health and safety regulatory agencies or that endangers human life and/or property (Impact H&S-2);
- Inflict serious injuries to workers, visitors to the area or area land users (Impact H&S-3);
- Create electric and magnetic fields near an existing or proposed sensitive land use, such as schools or hospitals, which would pose a plausible risk to human health (Impact H&S-4);
- Create substantial interference and disruption of emergency communications and electronic health/safety devices that results in substandard performance (Impact H&S-5); or
- Change traffic patterns that result in hazardous situations for motorists or pedestrians (Impact H&S-6).

4.11.2 Environmental Protection Measures

- Conform with safety requirements for maintaining the flow of public traffic and conduct construction and operations to offer the least possible obstruction and inconvenience to public transportation.
- Post proper signage in areas within the easement that will require temporary closure or limited access to accommodate certain land uses. Where feasible, construction activities would be scheduled to minimize impacts to agricultural activities. If this is not feasible and damage occurs, the landowner may be compensated.
- Mark structures and/or shield wire with highly visible devices for identified locations, as required by applicable laws and regulations (for example, Federal Aviation Administration regulations).

4.11.3 Proposed Project

Each health and safety issue described below is highly regulated by one or more of the following agencies: U.S. Department of Transportation (DOT), EPA, OSHA, and DOE, as well as state, county, and local governments. Additionally, Western and its contractors are required to comply with safety and environmental protection policies and guidance developed by Western, including Western's Occupational Safety Program (WAPA Order 3790.1B), the Power System Maintenance Manual (PSMM), the Power System Safety Manual (PSSM), and Power Systems Operations Manual (PSOM).

The DOE Office of NEPA Policy and Compliance has mandated that accidents and intentional acts of destruction (terrorism) be addressed in NEPA documents (DOE, 2002; and DOE, 2006). For this Project, this would include spills, falls and other types of accidents, catastrophic wildfire and intentional acts of destruction. Some of these risks can be reduced through appropriate maintenance and management, but all of these events are dependent on many complex variables and are unpredictable. The degree of uncertainty in this analysis is therefore high. However, this impacts analysis discloses the primary risks to life, property, and environmental values.

Impact H&S-1 Interfere with emergency response capabilities or resources.

The Proposed Project would be constructed, operated and maintained in a safe manner at all times, following Western's requirements. The Proposed Project is not expected to generate a significant increase in demand for emergency services. Wildfire hazards will be minimized by controlling weeds and grasses within the Project area, such as maintaining height of grasses and brush at no more than 10 inches. Fire danger would also be reduced by avoiding certain activities during very dry and hot conditions, such as those that prompt a Red Flag Warning or Fire Weather Watch advisory by the National Weather Service. During such conditions, any activity that could emit a spark or high heat would be avoided after 10 am each day. All machinery used for the Project would be equipped with spark arrestors.

The Proposed Project would not interfere with movement of emergency vehicles during construction, operation and maintenance activities. Impacts to traffic are addressed in Section 4.14, Traffic and Transportation.

Impacts to emergency response capabilities and resources would be short-term and negligible. Under CEQA, this impact would be less than significant.

Proposed Project construction would be short-term and maintenance activities that could interfere with emergency response capabilities or resources would be infrequent. During operation, all hazardous materials for permanent storage in the projects' finished facilities would be reported to the applicable Certified Unified Program Agencies according to applicable federal state, and local requirements. This will ensure emergency service providers are informed of the hazardous materials stored at the facilities, and can make plans to respond accordingly.

Impact H&S-2 Create worker health hazard(s) beyond limits set by health and safety regulatory agencies or that endangers human life and/or property.

Hazardous Materials and Hazardous Waste

Hazardous materials handling and use during project construction and maintenance are expected to be limited to petroleum-based products for vehicle fueling and lubrication. Hazardous waste could be generated during the handling of hazardous materials, such as used motor oil. Construction and maintenance activities would be conducted by personnel trained in the proper handling and storage of hazardous materials and waste, such as during fueling of construction vehicles and equipment. Personnel would also receive training regarding notification requirements, and containment and cleanup actions to take in the event of a spill of hazardous materials or waste. Spill kits for containment and cleanup would be maintained anywhere hazardous materials or waste are handled. Hazardous materials will not be stored outside the substations or staging areas. Waste would be managed in accordance with applicable regulations, and removed for final disposal within allowable time limits.

Valley Fever

Contracting Valley Fever, as an indirect impact from fugitive dust generated by Project activities, could pose a health risk to workers and nearby residents. However, with suppression of fugitive dust through Western's Construction Standard 13.13 and following the Project EPMs, the risk of contracting Valley Fever from dust produced by Project activities would be minimal.

Impacts to worker health and safety would be negligible. Under CEQA, this impact would be less than significant.

Impact H&S-3 Inflict serious injuries to workers, visitors to the area or area land users.

Wildfires

Grassfires often do not damage the galvanized steel transmission towers or the conductors because they move very quickly (15 mph on average, with pulses up to 35 mph). Because of their speed, however, wildfires present a serious danger to any person in the area of the fire. Fires outside of Western's easements could start for various reasons and later move into the easement, endangering workers during construction and system operation, as well as recreation users that pass through the project ROW, such as those accessing the San Luis Reservoir State Recreation Area, Cottonwood Creek Wildlife Area, and O'Neal Forebay Wildlife Area, and people who have access to the project ROW on private lands, such as ranch owners and employees.

Following Western's standard construction practice, vehicles will be restricted to designated access routes and work areas. Where appropriate, herbicides would be used to control weeds, in conformance with standards in the California Department of Pesticide Regulation PRESCRIBE database. Nonetheless, under CEQA, direct and indirect impacts would be potentially significant absent mitigation given the potential to inflict serious injuries from wildfire hazards.

Mitigation Measures for Impact H&S-3

MM H&S-1 Prepare a fire plan. Prior to construction in any given segment, Western shall prepare a Fire Plan for that area, in cooperation with applicable firefighting and land management areas with jurisdiction within that segment. The plan will establish standards and practices that will minimize the risk of fire danger, and in case of fire, provide for immediate suppression and notification. At a minimum, the plan will include the following elements:

- **Fire call directory.** During construction and when completing maintenance activities within the Project easements throughout the year, should Western (or a representative of Western) identify a fire during construction or maintenance activities, Western (or a representative of Western) shall immediately call 911. In addition, Western (or Western's representative) shall contact applicable land management agencies within 15 minutes of identifying a fire. Applicable land management agency phone numbers will be included in all Western contracts pertinent to SLTP construction and O&M and distributed within Western. Western will also provide contact information for its 24 Hour Folsom Dispatch Office and applicable supervisors during construction and maintenance to all land management agencies with jurisdiction over any portion of the Project so the agency can inform Western of any fire identified on or near Western's easements. The fire call directory will be updated by Western each year (preferably before April 1). Updates will include dispatch centers, key contacts, titles, and daytime and after-hour phone numbers. The updated directory will be produced by Western and distributed to Western, land management agencies and contractors as appropriate.
- **Obtain background information on fire potential.** Prior to commencing construction or maintenance activities within Project easements, Western will contact the applicable firefighting agency for that area to obtain information on the potential for wildfire and to provide a schedule of onsite crew work.

- **Communication.** Western and/or its contractors will have reliable communication (cell phone, satellite phone or radio) present on the job site. If cellular coverage is not available, the location of the nearest available phone will be identified to all crewmembers.
- **Worker Awareness.** Project workers will be briefed on precautions necessary for adherence to the Fire Plan. The plan will identify safety measures, tools to carry, and instruction in the event of a fire. Communication of the daily Project Activity Levels for the area will be discussed.
- **Construction restrictions based on fire conditions.** Western (or a representative of Western) will be responsible for checking daily fire levels during project construction and modifying construction operations based on the level of wildfire hazard for that day. Working with the applicable land management or firefighting agency, the Fire Plan will include a description of requirements for responding to a given level of threat. This may include, for instance, providing a fire patrol, or restricting activities during peak heat hours.
- **Water supply for firefighting.** The Fire Plan shall identify the location of available water supplies, including the 300-gallon tank (minimum) filled with water that shall be stored at each individual worksite(s) during the fire season. Western will consult with applicable land management and firefighting agencies to determine appropriate tank storage locations for inaccessible worksite(s).
- **Fire management/vegetation management.** The Fire Plan shall also include details for reducing wildfire hazard throughout the life of the project, such as through vegetation management and creation of fire breaks. Fire breaks will be determined by coordinating with applicable land management and firefighting agency personnel. In addition, maintaining adequate easement clearance (i.e., trimming vegetation or trees close to transmission lines) will also reduce wildfire risk.

Level of Significance after Mitigation

Implementation of Mitigation Measure H&S-1 would reduce the potential for injury by requiring prevention of and rapid reaction to wildfire. The coordinated effort between Western, its contractors, and land management agencies in the Project area to minimize wildlife risk as prescribed in Mitigation Measure H&S-1 would reduce this impact to a less than significant level.

Physical Hazards

Physical hazards may include injury from falling, improper use of tools or machinery, construction site dangers, and electrocution. Workers typically perform elevated work from bucket trucks or by climbing structures. In both instances, Western requires workers to use fall-protection devices. During construction, work would be performed according to standard health and safety practices, and OSHA policies and procedures. Excavated trenches and holes will be covered when not being worked on. In addition, the installation of polymer insulators, which remain intact if vandalized by a rifle shot or other means, would reduce maintenance and electrical problems, and related exposure to physical hazards by workers. Western's construction workers and linemen are trained and experienced with transmission line operations and maintenance. Western's comprehensive safety program includes an annual update of its Power System Safety Manual that provides direction and guidance for prevention of accidents that

may result in personal injury, illness, property damage, or work interruption. The potential for serious injury resulting from physical hazards is low; impacts would be less than significant.

Vandalism and Acts of Intentional Destruction

Vandalism and intentional acts of sabotage of facility structures or conductors are unpredictable events. The chances of such acts occurring would be reduced by the limited access to the Project area. Western would inspect the project on a regular basis for any signs of sabotage or vandalism, and take action immediately if a potential hazard is found. The potential for serious injury resulting from vandalism and intentional acts of destruction is low; impacts would be less than significant.

This impact would be the same in the North, Central, San Luis, and South segments.

Impact H&S-4 Create electric and magnetic fields near an existing or proposed sensitive land use, such as schools or hospitals, which would pose a plausible risk to human health.

The existing transmission lines have no documented adverse public health and safety effects from EMF exposure. Circuits placed parallel to each other tend to cancel electric and magnetic fields, thus reducing the measured fields under the lines and at the edge of the easement. Also, no existing schools, hospitals or other sensitive land uses are closer than 1,000 feet from the Proposed Project corridors. Several schools are planned as part of the Villages of San Luis Community Plan in the urban reserve area to the east of the project corridor. Future development of sensitive land uses within the plan area would be required to conform with setback requirements of the plan, which specify at least a 1,000-foot buffer between public facilities and utility facilities.

The Project would be compliant with NESC guidance and Western would incorporate its engineering, design and operating standards on 500-kV and 230-kV lines. This would include proper grounding standards and practices for the transmission line. The electric and magnetic fields at the edge of the easement are anticipated to be well below the recommended guidelines of the International Commission on Non-Ionizing Radiation and the American Conference of Governmental Industrial Hygienist. The Project would therefore result in a negligible impact because it would not expose the public or workers to unusual or higher than usual levels of EMF. Under CEQA, this impact would be less than significant. This impact would be the same in the North, Central, San Luis, and South segments.

Impact H&S-5 Create substantial interference and disruption of emergency communications and electronic health/safety devices that results in substandard performance.
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Potential interference with electronic devices would come from corona, which is described in Section 3.9. Corona generated radio interference is most likely to affect the amplitude modulation (AM) broadcast band (535 to 1,705 kilohertz); frequency modulation (FM) radio is rarely affected. Only AM receivers located very near the transmission lines have the potential to be affected by radio interference. Television interference from corona effects occurs during bad weather, and is generally of concern for transmission lines with a voltage of 345-kV or more and only for receivers within about 600 feet of the transmission line. The potential for the Proposed Project to interfere and disrupt emergency communications or electronic devices is negligible. Under CEQA, this impact would be less than significant. This impact would be the same in the North, Central, San Luis, and South segments.

Impact H&S-6 Change traffic patterns that result in hazardous situations for motorists or pedestrians.

The proposed transmission lines would span roads in the project area. Following the Project EPMs and construction standards (listed in Appendix F) would ensure public safety. There would be no change in traffic patterns attributable to the Proposed Project. Therefore, there would be no impact under CEQA. This impact would be the same in the North, Central, San Luis, and South segments.

4.11.4 Corridor Alternatives

The Proposed Project and all corridor alternatives would have identical effects on Public Health and Safety. CEQA determinations for all impacts to Public Health and Safety from all alternatives would be the same as for the Proposed Project.

4.11.5 No Action/No Project

Under the No Action/No Project Alternative, Western would not construct the SLTP. No new facilities would be built, and therefore there would be no impacts to public health and safety.

4.12 Recreation

4.12.1 Thresholds of Significance

The Proposed Project and alternatives would have significant, adverse effects on recreation if any activity associated with their construction, operation, and maintenance would:

- Conflict with established, designated, or planned recreation areas or activities (Impact REC-1);
- Result in changes that alter or otherwise physically affect established, designated, or planned recreation areas or activities (Impact REC-2);
- Decrease accessibility to areas established, designated, or planned for recreation (Impact REC-3);
- Increase demand for recreation activities due to the influx of people during construction and operation of the Proposed Project that would exceed capacity for that activity in a given area, such as a campground, wilderness, hunting area and/or trails (Impact REC-4).

4.12.2 Environmental Protection Measures

- On completion of the work, all work areas except permanent access roads would be returned to pre-construction conditions unless otherwise specified by the landowner/manager.
- Construction and operations would be conducted to prevent unnecessary destruction, scarring or defacing of the natural surroundings to preserve the natural landscape to the extent practicable.
- Proper signage would be posted in areas within the easement that would require temporary closure or limited access to accommodate certain land uses. Where feasible, construction activities would be scheduled to minimize impacts to agricultural activities. If this is not feasible and damage occurs, the landowner may be compensated.

4.12.3 Proposed Project

Impact REC-1 Conflict with established, designated, or planned recreation areas or activities.

While dispersed recreation may occur, there are no local, state, or federally established, designated, or planned recreation areas or activities within the North or Central segments of the Proposed Project. Therefore, no impacts would occur in this portion of the Proposed Project.

Transmission Lines

The San Luis and South segments of the Proposed Project cross portions of the SLRSRA and the Lower Cottonwood Wildlife Area (see Figure 3.12-1). Existing recreational resources and activities available in these areas, such as designated trails and overlooks, campgrounds and facilities, water and shore activities could be temporarily disrupted by Project construction. Temporary direct and indirect adverse impacts to air quality, noise, and visual resources or a loss of sensitive resources, such as wildlife or pristine viewsheds could degrade the experience of recreationists in these areas.

The presence of transmission line structures, depending on their exact location with the corridors, may conflict with planned upgrades to established recreation areas. The SLRSRA RMP/GP, described in Section 3.12.1, provides for additional facilities within the Medeiros Use Area including a new restroom, parking lot, windsurfing launch area, water based play area, 150 tent and RV sites, 100 primitive campsites, and alternative overnight lodging. The Proposed Project could affect the placement of these facilities or prevent them from being completed resulting in a substantial, long-term impact. Under CEQA, this would result in a significant impact.

Substations

Modifications to existing substations or the construction and operation of the new Tracy East Substation would not result in direct or indirect impacts as these areas do not overlap with established, designated, or planned recreation areas or activities.

Construction and operation of the new Los Banos West Substation would require up to 50 acres within the existing 150-acre Jasper Sears OHV Use Area. As described in Section 3.2.1, this OHV Use Area is regionally unique because it mainly serves beginner riders with its flat and open terrain. The proposed substation would not be compatible with the parcels' current designated recreational use under the SLRSRA RMP/GP. Although the exact location of the proposed substation is not yet determined, Western believes that the OHV use area could continue to operate within the remaining 100 acres. Nonetheless, permanent conflicts with the current use of this established recreation area would occur, which would constitute a significant impact to recreational resources.

Mitigation Measures for Impact REC-1

MM NOISE-1 **Provide construction notification.**

MM NOISE-2 **Implement Best Management Practices for construction noise.**

MM AQ-1 **Reduce or offset construction equipment emissions.**

MM REC-1 **Coordinate with local agencies to identify tower locations.** Western shall coordinate with the CDPR regarding transmission line structure locations within the SLRSRA boundary to minimize conflicts with planned recreation areas and facility management.

MM REC-2 **Modify existing facilities within and relocate, if necessary, the entrance to the Jasper Sears OHV Use Area.** Western shall coordinate with Reclamation and CDPR to identify modifications to existing facilities within the Jasper Sears OHV Use Area necessary to facilitate continued operation of the Jasper Sears OHV Use Area. In the case that the new Los Banos West Substation renders the existing entrance to the OHV use area unusable, Western shall coordinate with Reclamation and CDPR to relocate the entrance to provide continued access to the OHV use area. Modifications to the Jasper Sears OHV Use Area, including a new entrance as necessary, shall be operational before construction begins within the OHV use area.

Level of Significance after Mitigation

Implementation of Mitigation Measure NOISE-1 would provide proper notification of planned construction activities. This would alert recreationists to upcoming construction noise with adequate time to make arrangements to limit their exposure to the noise (e.g., by leaving or avoiding the area during times of construction) thereby reducing the disruption of existing recreational resources and activities available in established, designated, and planned recreation areas within the study area. Implementation of Mitigation Measures AQ-1 and NOISE-2 would reduce the severity of indirect adverse impacts to air quality and noise that could degrade the experience of recreationists in established, designated, or planned recreation areas or activities. Implementation of Mitigation Measure REC-1 would reduce temporary conflicts with recreation areas or activities by ensuring cooperation with affected resource management agencies to determine tower structure locations that would minimize conflict with planned recreation areas or facility management. In combination, implementation of these mitigation measures would reduce impacts of the Proposed Project facilities (other than the new Los Banos West Substation, discussed below) to less than significant.

Mitigation Measure REC-2 requires modification of existing facilities to maintain the current function of the Jasper Sears OHV Use Area and reduce conflicts with this recreation area to the maximum extent feasible. However, implementation of Mitigation Measure REC-2 would be outside of the jurisdiction of Western and the Authority. Therefore, the agencies cannot conclusively determine whether such mitigation is feasible (i.e., capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, and other factors). As such, this impact remains significant and unavoidable.

Impact REC-2 Result in changes that alter or otherwise physically affect established, designated, or planned recreation areas or activities.

Impact REC-2 would not occur in the North or Central segments as they do not contain any established, designated or planned recreation areas or activities.

Transmission Lines

Alterations of the landscape within the established and designated recreation areas in the study area (identified and described in Section 3.12) would be primarily caused by construction and operation activities including the installation of towers, foundation excavation, conductor stringing, and maintenance actions. Pursuant to EPMs, Western would construct and operate the Proposed Project in a manner that would prevent unnecessary destruction, scarring or defacing of the natural surroundings. On completion of construction, all work areas except permanent access roads would be returned to pre-construction conditions. Temporary, impacts would include visual, air quality, and noise impacts that could affect the setting and landscape of existing recreation areas.

During operation of the Proposed Project, transmission line structures within the San Luis and South Segments would be visible from some of the recreation sites and activities around the SLRSRA and the Cottonwood Creek Wildlife Area. This could potentially reduce the quality of outdoor recreation experiences due to the visibility of permanent, man-made features. However, this impact would be minor because there are existing high-voltage transmission lines and substations currently visible from parts of these recreation areas.

Under CEQA, this impact would be less than significant.

Substation Construction

Construction and operation of the new Los Banos West Substation would require up to 50 acres within the 150-acre Jasper Sears OHV Use Area. The site grading, property and substation fencing, and installation of electrical facilities associated with the substation construction would result in permanent physical alteration of this recreation area. Although the exact location of the proposed substation is not yet determined, Western believes that the OHV use area could continue to operate within the remaining 100 acres. Nonetheless, substantial physical alteration of up to one-third of the recreation area would occur, which would constitute a significant impact to recreational resources.

Mitigation Measures for Impact REC-2

MM REC-2 Modify existing facilities within and relocate, if necessary, the entrance to the Jasper Sears OHV Use Area.

Level of Significance after Mitigation

Mitigation Measure REC-2 requires modification of existing facilities to maintain the current function of the Jasper Sears OHV Use Area and minimize alterations of this recreation area to the maximum extent feasible. However, implementation of Mitigation Measure REC-2 would be outside of the jurisdiction of Western and the Authority. Therefore, the agencies cannot conclusively determine whether such mitigation is feasible (i.e., capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, and other factors). As such, this impact remains significant and unavoidable.

Impact REC-3 Decrease accessibility to areas established, designated, or planned for recreation.
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The North Segment of the Proposed Project does not overlap with areas established, designated, or planned for recreation and therefore, no direct or indirect impacts would occur.

Transmission Line Construction

Project construction activities may result in a temporary decrease in accessibility to recreation resources when construction, operation, or maintenance activities are located adjacent to primary access points of existing recreational areas.

The Central Segment corridor is adjacent to portions of the I-5 corridor. Construction of the Proposed Project may result in a temporary decrease in or loss of accessibility to recreation areas accessed from the I-5 corridor (e.g., Frank Raines Off-Highway Vehicle Park, Carnegie State Vehicular Recreation Area, and Corral Hollow Ecological Preserve). Therefore, construction of the Proposed Project may result in access restrictions to these recreation areas.

Additionally, the San Luis Segment overlaps with several main access points to the SLRSRA, and one main access route to the Lower Cottonwood Creek Wildlife Area, as described in Section 3.12.1.1. If Project construction is conducted adjacent to these access points, temporary closure or limited access may occur. However, construction of the transmission line will be temporary and conducted in phases. Therefore, it is unlikely that all access points to any of these established recreation areas will be closed or limited during the same period of time or for an extended period of time. In addition, pursuant to EPMs, proper signage would be posted in areas within the ROW that would require temporary closure or limited access to inform recreationists of alternative routes and access points. This would result in minor, temporary adverse impacts to accessibility.

The South Segment corridor overlaps with the Los Banos Creek Reservoir subarea of the SLRSRA. Project construction may occur adjacent to main access routes and established access points and may cause a temporary decrease or loss of access to recreation resources within this area. However, as described above, it would be unlikely that access to the recreation area would be completely lost or a decrease in accessibility would occur for an extended period of time. This impact would be short-term, temporary, and minor.

Under CEQA, this impact would be less than significant for transmission line construction.

Substation Construction

As described under Impact REC-1, permanent preclusion of up to one-third (50 acres) of the Jasper Sears OHV Use Area would occur. If construction and operation of the substation occurs within the existing entrance to the OHV use area, a decrease or a complete loss of access to the recreation area could occur. This decreased accessibility would constitute a significant impact.

Mitigation Measures for Impact REC-3

MM REC-2 **Modify existing facilities within and relocate, if necessary, the entrance to the Jasper Sears OHV Use Area.**

Level of Significance after Mitigation

Mitigation Measure REC-2 requires relocation of the entrance to the Jasper Sears OHV Use Area in the case that the new Los Banos West Substation renders the existing entrance to the OHV use area unusable. Implementation of this measure would preserve access to the Jasper Sears OHV Use Area. However, implementation of Mitigation Measure REC-2 would be outside of the jurisdiction of Western and the Authority. Therefore, the agencies cannot conclusively determine whether such mitigation is feasible (i.e., capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, and other factors). As such, this impact remains significant and unavoidable.

Impact REC-4 **Increase demand for recreation activities due to the influx of people during construction and operation of the proposed project that would exceed capacity for that activity in a given area, such as a campground, wilderness, hunting area and/or trails.**

Construction of the Proposed Project is anticipated to require a relatively small workforce (an estimated maximum employment of 87 construction workers) over an anticipated period of 525 days. Construction of the Proposed Project would be temporary and not result in a substantial influx of people, beyond the workers and possibly their families. The existing capacity of recreational resources, such as campgrounds, wilderness and hunting areas, and trails within the Project area (described in Section 3.12) would not be exceeded by this minor increase in demand. The rural setting and availability of open space in the Project area would supply additional dispersed recreational opportunities to accommodate additional demand for recreation. Impacts during operation and maintenance will be similar to or less severe in nature and duration than that of new construction as the influx of people would be much less. Under CEQA, this would be a less than significant impact.

4.12.4 Corridor Alternatives

Impacts to recreational resources vary by alternative depending on the presence of existing established or designated recreational areas or activities.

4.12.4.1 Central Segment

Patterson Pass Alternative

As with the Proposed Project, Impacts REC-1 through REC-3 would not occur as there are no local, state, or federally established, designated, or planned recreation areas or activities within this alternative. REC-4 would also be similar to the Proposed Project as this alternative would result in similar demands on the same recreation areas. CEQA significance determinations would be the same as the Proposed Project.

4.12.4.2 San Luis Segment

Butts Road Alternative

This alternative would overlap a greater portion of the Lower Cottonwood Creek Wildlife Area and the SLRSRA in comparison to the Proposed Project. Although still minor, Impacts REC-2 and REC-3 would be

slightly greater under this alternative. However, REC-1 and REC-4 would be the same as described under the Proposed Project as the exact location of the transmission line within the recreation areas does not affect the intensity of these impacts. The CEQA significance determination would be the same as the Proposed Project.

West of Cemetery Alternative

This alternative would overlap a greater portion of the Lower Cottonwood Creek Wildlife Area and the SLRSRA in comparison to the Proposed Project. Although still minor, Impacts REC-2 and REC-3 would be slightly greater under this alternative. However, REC-1 and REC-4 would be the same as described under the Proposed Project as the exact location of the transmission line within the recreation areas does not affect the intensity of these impacts. The CEQA significance determination would be the same as the Proposed Project.

West of O'Neill Forebay 70-kV Alternative

This alternative would overlap a greater portion of the Lower Cottonwood Creek Wildlife Area and the SLRSRA in comparison to the Proposed Project. Although still minor, adverse Impacts REC-2 and REC-3 would be slightly greater under this alternative. However, REC-1 and REC-4 would be the same as described under the Proposed Project as the exact location of the transmission line within the recreation areas does not affect the intensity of these impacts. The CEQA significance determination would be the same as the Proposed Project.

4.12.4.3 South Segment

San Luis to Dos Amigos Alternative

This alternative would require the same construction and project components as the Proposed Project and overlap a similar portion of existing recreation areas. Therefore, Impacts REC-1 through REC-4 would be similar to those under the Proposed Project. The CEQA significance determination would be the same as the Proposed Project.

Billy Wright Road Alternative

This alternative would overlap a larger portion of the Los Banos Creek Reservoir in comparison to the Proposed Project and would cross the designated Path of the Padres trail (described in Section 3.12). Due to the local importance of this event, recreationists may be more sensitive to changes in the setting within this area, resulting in a short-term moderate impact. Therefore, Impacts REC-1, REC-2 and REC-3 would be greater under this alternative. However, REC-4 would be the same as described under the Proposed Project as it is analyzed on a regional basis and the exact location of the transmission line within the recreation areas does not affect the intensity of this impact. The CEQA significance determination would be the same as the Proposed Project.

4.12.5 No Action/No Project

Under this alternative, construction and operation of the San Luis Transmission Line Project would not occur. Therefore, there would be no impacts to recreational resources.

4.13 Socioeconomics

4.13.1 Thresholds of Significance

The Proposed Project and alternatives would have significant, adverse effects on socioeconomics if any activity associated with their construction or operation would result in:

- Permanent displacement of existing residences or businesses (Impact SE-1);
- Permanent and irreversible loss of work for a any major sector of a community (Impact SE-2);
- A substantial decrease in property values (Impact SE-3);
- An increase in population that would create shortages of housing and place an excessive burden on local government and community facilities and services (Impact SE-4);
- A need for new infrastructure systems, including power or gas utilities, communications systems, water and sewer services, or solid waste disposal systems (Impact SE-5); or
- A long-term economic benefit (a positive impact that could be considered significant) (Impact SE-6).

4.13.2 Environmental Protection Measures

There are no EPMs applicable to Socioeconomics.

4.13.3 Proposed Project

Impact SE-1	Permanent and irreversible loss of work for any major sector of a community.
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Proposed Project construction would be conducted in stages; therefore, personnel would not be working on all tasks simultaneously at a given location. Construction activities would require the employment of about 87 construction workers over an estimated 525 days. As shown in Table 3.13-3, a large civilian labor force is available within the study area. It is expected that this existing labor pool would be sufficient to meet the job opportunities generated by the Proposed Project.

The creation of new jobs may help to lower the unemployment rate for the duration of the Proposed Project, thereby resulting in a temporary beneficial socioeconomic impact within the study area. This beneficial impact on worker employment and income would indirectly benefit local businesses when workers buy gas and food or as some workers stay in local motels.

Under CEQA, to the extent employment considerations affect the Proposed Project's potential physical effects, this impact would be less than significant. This impact would be the same in the North, Central, San Luis, and South segments.

Impact SE-2	An increase in population that would create shortages of housing and place an excessive burden on local government and community facilities and services.
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The Project area is within commuting distance from residential communities in the area. Construction and maintenance workers not hired locally would be accommodated by the vacant housing or hotels in the study area (see Table 3.13-2). Construction and operation of the Proposed Project would not create a shortage of housing. Under CEQA, this impact would be less than significant. This impact would be the same in the North, Central, San Luis, and South segments.

Impact SE-3	A need for new infrastructure systems, including power or gas utilities, communications systems, water and sewer services, or solid waste disposal systems.
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Due to the adequate supply of vacant housing and hotels in commuting distance from the Proposed Project and the corresponding lack of demand for additional housing, the Proposed Project would not create a need for new infrastructure systems, including power or gas utilities, communications systems, water and sewer services, or solid waste disposal systems. No direct or indirect impacts would occur. This impact would be the same in the North, Central, San Luis, and South segments.

Impact SE-4	Permanent displacement of existing residences or businesses.
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The Proposed Project would be constructed primarily within rural areas in Alameda, San Joaquin, Stanislaus, and Merced Counties with the exception of moderate density development in the North Segment of the Proposed Project near the Tracy Substation and a small area northeast of the O'Neill Substation. Typically, project components (e.g., towers) can be sited to avoid any displacement of existing homes and businesses and existing land uses within easements are able to continue. Although very unlikely, if permanent displacement of adjacent residences and businesses occurred, this impact would be significant.

Mitigation Measures for Impact SE-4

MM SE-1 **Acquire land rights.** Where new easements are needed, Western would acquire land rights (easements) in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (P.L. 91-646), as amended. Generally, easements would be purchased through negotiations with landowners at fair market value. The landowner would normally retain title to the land and could continue to use the property in ways that would be compatible with the transmission line.

Level of Significance after Mitigation

In the event that businesses or residential structures would be displaced, Mitigation Measure SE-1 would require Western to acquire land rights in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (P.L. 91-646), as amended. With implementation of mitigation, this impact would be reduced to less than significant.

This impact would be the same in the North, Central, San Luis, and South segments.

Impact SE-5	Substantial decrease in property values.
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Studies of the impact of power lines on property values have produced mixed findings. A recent publication, *Towers Turbines and Transmission Lines Impact on Property Value* (2013, Bond, Sims, & Dent) provides a comprehensive review of decades of studies of high-voltage transmission lines, cell towers, and wind farms in various countries. In particular, Chapter 6 of the book reviews studies of high-voltage transmission lines in North America.

According to this publication, a number of factors are perceived to have the potential to diminish property values. These include concerns over whether there is a potential health and safety risk posed by the lines (see the discussion of EMF in Section 4.11), the visibility of the line from the subject property, and the potential for increased traffic, noise, and dust to occur during construction and operation activities. However, there are no definitive answers about the degree to which the presence of a transmission line may affect property value.

Although it may be argued that the value of some individual properties is affected, there would be no perceptible change in property values overall. In addition, the Proposed Project would occur primarily adjacent to existing high-voltage transmission lines, resulting in negligible impacts to property values. Under CEQA, to the extent socioeconomic considerations affect the Proposed Project's potential physical effects, this impact would be less than significant.

This impact would be the same in the North, Central, San Luis, and South segments.

Impact SE-6 Long-term economic benefit.

Transmission line construction would create new temporary jobs for construction workers and temporarily cause a positive increase in income and related economic activity in the affected counties. In addition, some material would be purchased to construct the transmission line in the local study area, which would increase revenue for some businesses and create a minor increase in the tax revenue received by local and state government. Electricity rates are anticipated to be lower for Reclamation and its customers served by the Proposed Project than by service under the CAISO Tariff.

Therefore, this would result in a long-term economic benefit. This impact would be the same in the North, Central, San Luis, and South segments.

4.13.4 Corridor Alternatives

Impacts to socioeconomics would be the same for each alternative. Impacts SE-1 through SE-6 are based on a regional socioeconomic analysis within the study area, and therefore, would be similar to that of the Proposed Project. CEQA significance determinations for each impact would be the same as the Proposed Project.

4.13.5 No Action/No Project

Without the construction of the SLTP, Impacts SE-1 through SE-5 would not occur. It is also anticipated that rates would be higher for Reclamation and its customers under the No Action Alternative in comparison to the Proposed Project. Therefore, Impact SE-6 (Long-term economic benefit) would not occur.

4.14 Traffic and Transportation

4.14.1 Thresholds of Significance

The Proposed Project and alternatives would have significant, adverse effects on traffic and transportation if any activity associated with their construction or operation would result in:

- Increased traffic that exceeds levels of service established by the California Department of Transportation, a county transportation agency, or city/town transportation department (Impact TRAFFIC-1);
- Traffic delays on a primary transportation corridor (Impact TRAFFIC-2);
- Inadequate emergency access (Impact TRAFFIC-3);
- Road dust, severe road damage, or both at levels that create hazardous situations for motorists and pedestrians (Impact TRAFFIC-4);
- Disruption to railways or bikeways during construction (Impact TRAFFIC-5);
- Change in air traffic patterns, including alterations of flight paths and operations (Impact TRAFFIC-6); or
- Conflicts with current or future federal, regional, state, and local airport plans (Impact TRAFFIC-7).

4.14.2 Environmental Protection Measures

- Western will restrict all necessary lane closures or obstructions on major roadways associated with construction activities to off-peak periods to avoid substantial traffic congestion and delays.
- Western will ensure that roads or sidewalks damaged by construction activities would be properly restored to their pre-construction condition.
- Conform with safety requirements for maintaining the flow of public traffic and conduct construction and operations to minimize obstruction and inconvenience to public transportation.
- Mark structures and/or shield wire with highly visible devices for identified locations, as required by applicable laws and regulations (for example, Federal Aviation Administration regulations).

4.14.3 Proposed Project

Project effects on traffic and transportation would come from two sources: truck traffic for moving equipment, materials and supplies as needed over the local road network, and workers commuting to the worksite daily. Changes in transportation are not expected to occur outside the immediate project area; therefore, regional transportation beyond the four-county area of the project is not discussed. Unless otherwise specified, the impact discussion that follows applies to all segments of the Project.

Impact TRAFFIC-1 Cause increased traffic that exceeds levels of service established by the California Department of Transportation, a county transportation agency, or city/town transportation department

The Project would cause only minor, temporary increases in traffic and would have no effect on LOS ratings. Under CEQA, this impact would be less than significant.

Impact TRAFFIC-2 Cause delays on a primary transportation corridor

The road network in the area is described in Section 3.14.1.1 and shown in Figures 3.14-1a through 1d. Equipment, materials and supplies for the Proposed Project would be moved to staging areas along the route using trucks of various sizes. Truck traffic would be sporadic, moving equipment and materials as needed, but would be scheduled to avoid peak hours, as well as avoid congested routes in general.

Road restrictions may be needed to accommodate truck traffic, tower construction, or stringing of wires. Pursuant to EPMs, Western would restrict all necessary lane restrictions or obstructions on major roadways associated with construction activities to off-peak periods to minimize traffic congestion and delays. Nonetheless, it is expected that stringing of wires over highways, particularly I-5 and Highway 152, would cause delays on these primary transportation corridors. Therefore, this impact would be significant.

Mitigation Measures for Impact TRAFFIC-2

MM TRAFFIC-1 Prepare and submit Traffic Control Plans. Prior to the start of construction, Western would submit traffic control plans to all agencies with jurisdiction of public roads that would be affected by construction activities. The plans will include details on work schedule, associated truck traffic and commuter traffic for all portions of the project. Plan requirements include:

- Coordinating with the affected jurisdictions on construction hours of operation.
- Following guidelines of the local jurisdiction for road closures caused by construction activities.
- Installing traffic control devices as specified in the California Department of Transportation's (Caltrans') Manual of Traffic Controls for Construction and Maintenance Works Zones (California Department of Transportation, 1996).
- Notifying the public of road closures in the immediate vicinity of the construction zone and/or of temporary closures of bike lanes, and recreation trails.
- Providing access to driveways and private roads outside the immediate construction zone.
- Monitoring road and bike lane damage and repairing roads and bike lanes damaged during construction, or providing compensation for damage to roadways and bikeways.
- Coordinating with Caltrans and the California Highway Patrol for stringing transmission line conductors and fiber over interstate or state highways, an activity that would require close coordination with these agencies to minimize hazards to workers and the public.

Level of Significance after Mitigation

Pursuant to Mitigation Measure TRAFFIC-1, Western would submit traffic control plans prior to construction to all agencies with jurisdiction of public roads that would be affected by construction activities. These plans would include provisions for minimizing delays if traffic restrictions are needed while conducting work along or over roadways. With implementation of this mitigation measure, delays along primary transportation corridors would be less than significant.

Impact TRAFFIC-3 Cause inadequate emergency access

There are no emergency facilities along the Project routes, such as fire or police stations or hospitals. Project construction-related traffic is expected to be minor and temporary, and no extended closures of major transportation routes are anticipated. In coordination with affected jurisdictions, Western will develop and implement a traffic control plan, which will include an emergency access plan. The goal of the plan will be to reduce construction-related effects on the local roadway system and avoid hazardous traffic and circulation patterns during the construction period. All construction activities will follow the standard construction specifications and procedures of the appropriate jurisdictions. The emergency access plan would include provisions to allow for access into and adjacent to the construction zone for emergency vehicles. The emergency access plan requires coordination with emergency service providers before construction. It would provide effective traffic and navigation direction, substantially reducing the potential for disruptions to response routes. Therefore, the Project would have a negligible effect on emergency access. Under CEQA, this impact would be less than significant.

Impact TRAFFIC-4 Cause road dust, severe road damage, or both at levels that create hazardous situations for motorists and pedestrians

By following the Project EPMs and construction standards, the Project is not expected to cause dust that would create hazardous conditions for motorists, bicyclists or pedestrians in the area. As shown in Table 3.14-1, most of the paved public roads that would be used for construction access in the Project region are in Good to Excellent condition and likely will not be damaged by construction-related traffic. The one exception is Oak Flat Road, which is in Fair condition in the area of the Project and potentially could be damaged by construction-related truck traffic. In the unlikely event that roadways are damaged to the point that they represent a hazard to motorists or other users, EPMs require Western to ensure that roads or sidewalks damaged by construction activities would be properly restored to their preconstruction condition.

This traffic and transportation impact would be negligible. Under CEQA, this impact would be less than significant.

Impact TRAFFIC-5 Disruption to railways or bikeways during construction

Western would consult with Union Pacific Railroad for the proposed SLTP crossing near Patterson Pass Road. An encroachment permit would be needed, which would outline necessary setbacks and clearances to ensure that there are no disruptions to rail service, effects on the stability of the line, or changes in access for Union Pacific Railroad. Rail disruptions would be minor.

Construction equipment may also need to traverse designated bikeways. This could result in minor temporary disruptions to the bikeways. This disruption would affect primarily the bikeway on Patterson Pass Road, and potentially to the California Aqueduct Bikeway. Construction would occur mostly during the work week, when bikeway use is minimal. Under CEQA, this impact would be less than significant.

Impact TRAFFIC-6 Changes in air traffic patterns, including alterations of flight paths and operations

Proposed Project structures would be as close as 2.1 miles to the Tracy Airport, and 3 miles to both the crop duster field near Westley and the closed airport near the community of Crows Landing. This distance is sufficient to minimize conflicts with the airports. Project structures would be located adjacent to existing transmission lines, and therefore, would not present a new hazard that would cause changes in air traffic patterns. Effects would be negligible. Under CEQA, this impact would be less than significant.

Impact TRAFFIC-7 Cause conflicts with current or future federal, regional, state, and local airport plans
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Because the Project would be located a minimum of 2.1 miles from any active or planned airport, and because its structures would be located adjacent to existing transmission lines, it would not present a new hazard to air traffic in the region. It would not cause a conflict with current or future airport plans. No impact would occur.

4.14.4 Corridor Alternatives

The Proposed Project and all corridor alternatives would have identical effects on traffic and transportation. CEQA determinations for all impacts to traffic and transportation from all alternatives would be the same as for the Proposed Project.

4.14.5 No Action/No Project

Under the No Action/No Project Alternative, Western would not construct the SLTP. No new facilities would be built, traffic in the region would not increase and there would be no impacts to traffic and transportation.

4.15 Visual Resources

4.15.1 Thresholds of Significance

The Proposed Project and alternatives would have significant, adverse effects on visual resources if any activity associated with their construction or operation would result in:

- Degradation of the foreground character or scenic quality of a visually important landscape (Impact VIS-1);
- Dominant visual changes in the landscape that are seen by highly sensitive viewer locations such as community enhancement areas or locations with special scenic, historic, recreational, cultural, and/or natural qualities that have been recognized as such through legislation or some other official declaration (Impact VIS-2);
- Visual interruption that would dominate a unique viewshed or scenic view (Impact VIS-3);
- A new source of substantial light or glare which would adversely affect day or nighttime views in the area (Impact VIS-4); or
- Conflict with visual standards identified by a federal land management agency (Impact VIS-5).

4.15.2 Environmental Protection Measures

There are no EPMs applicable to Visual Resources.

4.15.3 Proposed Project

Two main issues were assessed in determining impact significance: (1) the type and extent of actual physical contrast that would be caused by the Project, and (2) the visibility of a given corridor segment or transmission structures. The intensity of adverse effects to visual quality depends upon the amount of visual contrast between the proposed facilities and the existing landscape. Because the Proposed Project and alternative corridors are adjacent to existing transmission line corridors, the assessment of visual resource impacts has focused on incremental impacts of the planned new facilities combined with the existing facilities. The visual effects of new access road construction are not discussed, as these roads would not be visible from any viewpoint, and therefore have no impact on visual resources. Operation and maintenance activities for the Proposed Project and all alternatives also would have no effect on visual resources, and therefore, are not discussed in this section.

Neither the Proposed Project nor any alternative would introduce a source of light or glare into the region (VIS-4). The public lands in the Project Area are managed by state agencies under agreement with the U.S. Department of the Interior, and therefore are not subject to any visual standard established by a federal land management agency (VIS-5). Even if applicable, the Project would not result in visual effects that would conflict with any visual standard identified by a federal land management agency. Thus, there would be no impacts under these two criteria for any route, and therefore these impacts are not discussed further.

4.15.3.1 North Segment

New construction along the North Segment would result in minor incremental visual impacts. In general, this segment would be adjacent to existing transmission lines that dominate the landscape, and the area in general is highly disturbed by agricultural practices and the presence of two interstate highways, a

large industrial area, several wind farms, the California Aqueduct, and the Delta-Mendota Canal. Except for small areas in rolling hills, the visual quality is moderate. This would result in a minor incremental change to visual character in this segment.

Impact VIS-1 Cause degradation of the foreground character or scenic quality of a visually important landscape.

While some areas surrounding the Proposed Project in this segment are of moderate visual quality, there are no visually important landscapes in this area. Views of the Proposed Project area from the residences within the planned community of Mountain House are screened by fences and rows of trees along Green Valley Parkway.

The only structures in the same viewshed as the Proposed Project for this segment are the existing transmission lines and wind turbines. These structures have changed the visual quality of the area substantially. Therefore, there would be no degradation of a visually important landscape. Under CEQA, this impact would be less than significant.

Impact VIS-2 Introduce dominant visual changes in the landscape that are seen by highly sensitive viewer locations such as community enhancement areas or locations with special scenic, historic, recreational, cultural, and/or natural qualities that have been recognized as such through legislation or some other official declaration.

No known highly sensitive viewer locations exist along this segment of the Proposed Project. There are no public parks, scenic overviews, or scenic highways in the area, nor any identified place with special scenic, historic, recreational, cultural, and/or natural qualities. Therefore, there would be no degradation of a visually important landscape. Under CEQA, this impact would be less than significant.

Impact VIS-3 Cause visual interruption that would dominate a unique viewshed or scenic view.

No unique viewshed or scenic view exists in the area surrounding this segment. Therefore, there would be no visual interruption that would dominate any valued viewshed or scenic view. Under CEQA, there would be no impact.

4.15.3.2 Central Segment

Impact VIS-1 Cause degradation of the foreground character or scenic quality of a visually important landscape.

The viewshed along this segment is of high to very high visual quality. Most of the segment is of low sensitivity due to lack of access. However, the portions visible from I-5, which is designated as a Scenic Highway within this segment, have high visual sensitivity. The Project would also cross the Del Puerto Creek area, which is identified in the Stanislaus County General Plan as an important natural area with high scenic value due to the unusual rock outcrops that dominate the upper portions of the natural area, as well as rare sycamore groves and other natural features. The area is accessible by Del Puerto Canyon Road, which the County has listed as a potential scenic route. However, the portion of the Del Puerto Canyon that would be affected by the Project is in the lower portions of the canyon, near its entrance into the Central Valley. The views along the Proposed Project near the creek and road are mostly of vineyards and other agricultural operations, which are of moderate visual quality.

The Proposed Project would introduce new structures into the region. However, they would be located adjacent to several existing transmission corridors, and therefore, would not introduce high contrast to the viewshed. The incremental effect of adding a new line adjacent to existing lines would be minor in all areas except the portions visible from I-5 and Del Puerto Canyon Road, where the Proposed Project would have a moderate incremental effect. In all cases, there would be no degradation of a visually important landscape. Under CEQA, this impact would be less than significant.

Impact VIS-2	Introduce dominant visual changes in the landscape that are seen by highly sensitive viewer locations such as community enhancement areas or locations with special scenic, historic, recreational, cultural, and/or natural qualities that have been recognized as such through legislation or some other official declaration.
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Other than the portions of the Proposed Project visible from I-5 and the Del Puerto Canyon area, no known highly sensitive viewer locations exist in this segment. There are no public parks or scenic overviews in the area, nor any other identified place with special scenic, historic, recreational, cultural, and/or natural qualities. Portions of the Proposed Project would be seen by travelers along I-5 between Khalsa Road and Zacharias Road in Stanislaus County; this 6-mile segment of I-5 is designated as a scenic highway due to views of the rolling hills of the Diablo Range to the west, and views of farmlands to the east. The Project would also cross Del Puerto Canyon Road, which is listed as a potential scenic route by the County and is used to access a valued natural area with high scenic value, though views in the area crossed by the Project are primarily of previously disturbed farm and ranchlands in the lower part of the canyon.

The Proposed Project would introduce new structures into the region adjacent to existing transmission towers, and therefore, would not introduce high contrast to the viewshed. The incremental effect of adding a new line adjacent to these existing lines would be minor to moderate. Also, viewers driving on I-5 and on Del Puerto Road would view the Project for only a short time. Therefore, the Proposed Project would not introduce dominant visual changes in the landscape. Under CEQA, this impact would be less than significant.

Impact VIS-3	Cause visual interruption that would dominate a unique viewshed or scenic view.
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Views of the Diablo Range are high to very high in visual quality but are not unique. Very similar views can be found all along the Coast Ranges and the foothills of the Sierra Nevada in California. The Proposed Project would not be seen from any scenic view overlook¹ or public park in the area surrounding this segment. It would be seen from a 6-mile segment of I-5 that is designated as a scenic highway, and from a portion of Del Puerto Canyon Road, which is designated as a potential scenic route by the County. The Proposed Project would introduce new structures into the region adjacent to existing transmission towers, and therefore, would not introduce high contrast to the viewshed. The incremental effect of adding a new line adjacent to existing lines would be minor to moderate. Also, viewers driving on I-5 and on Del Puerto Canyon Road would view the Project for only a short time. Therefore, there would be no visual interruption that would dominate any valued viewshed or scenic view. Under CEQA, this impact would be less than significant.

¹ There are two scenic overlooks, a golf course and a rest stop along I-5 near this segment, but the Proposed Project would not be visible from these viewpoints.

4.15.3.3 San Luis Segment

Impact VIS-1	Cause degradation of the foreground character or scenic quality of a visually important landscape
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The viewshed along this segment is of high to very high visual quality. Much of the viewshed along this segment is of high sensitivity due to its visibility from important recreation areas, San Joaquin Valley National Cemetery, and a scenic highway (SR 152). The Proposed Project route travels on the lesser-used east side of O'Neill Forebay, where the Project would be visible from a scenic overlook at the San Joaquin Valley National Cemetery (3,300 feet from the Project), public golf course (1,800 feet from the Project), residences within Santa Nella Village (1,200 feet from the Project), a wildlife area, and travelers on Santa Nella Road and SR 152.

The 322-acre National Cemetery is a highly sensitive land use. It includes a memorial to the soldiers, sailors, airmen and marines who died in combat in Korea, another memorial dedicated to the 11th Airborne Division, a third memorial dedicated to submariners of World War II, 15,000 gravesites, and 8,000 in-ground cremation sites. Funerals for deceased active duty and veteran service members are nearly a daily occurrence, and the facility is highly praised for its gardens and surrounding scenery, especially from an overlook above the facility, where a flag is flown at half-mast every day. The Proposed Project would not be visible from most of the National Cemetery, including the memorials, gardens and gravesites. It would be visible from the scenic overlook, but would be more than 3,300 feet (0.6 mile) away, and therefore would not be prominent in the viewscape.

Many structures are within the same viewshed as the Proposed Project for this segment, including the existing transmission lines, infrastructure associated with the San Luis Reservoir and O'Neill Forebay, nearby housing and retail developments, highways, and canals. These structures have changed the visual quality of the area substantially. The Proposed Project would introduce new structures into the region adjacent to two to four sets of existing transmission towers, and therefore, would not introduce high contrast to the viewshed. The incremental effect of adding a new line adjacent to existing lines would be minor to moderate. Therefore, there would be no degradation of a visually important landscape. Under CEQA, this impact would be less than significant.

Impact VIS-2	Introduce dominant visual changes in the landscape that are seen by highly sensitive viewer locations such as community enhancement areas or locations with special scenic, historic, recreational, cultural, and/or natural qualities that have been recognized as such through legislation or some other official declaration
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Many highly sensitive viewer locations are located in the area surrounding this segment, including from the San Joaquin Valley National Cemetery and the recreation areas around O'Neill Forebay, Santa Nella Village, and SR 152. However, the Proposed Project structures would be in the middle to background view of these viewpoints, except where the Proposed Project would cross SR 152. The Proposed Project would introduce new structures adjacent to existing transmission towers, and therefore would not introduce high contrast to the viewshed. The incremental effect of adding a new line adjacent to existing lines would be moderate. Also, viewers driving on SR 152 would view the Project for only a short time. Therefore, the Proposed Project would not introduce dominant visual changes in the landscape. Under CEQA, this impact would be less than significant.

Impact VIS-3 Cause visual interruption that would dominate a unique viewshed or scenic view

Views of the Diablo Range, O'Neill Forebay, San Luis Reservoir and surrounding areas within this segment are high to very high in visual quality but are not unique. Very similar views can be found all along the Coast Ranges and the foothills of the Sierra Nevada in California. Visual sensitivity is also high to very high, due to the presence of a National Cemetery, recreation and residential land uses and a scenic highway in the area. The Proposed Project would introduce new structures adjacent to existing transmission towers, and therefore, would not introduce high contrast to the viewshed. The incremental effect of adding a new line adjacent to existing lines would be moderate. The Project would not be visible from most parts of the National Cemetery. From the scenic overlook at the National Cemetery, the Project would be more than 3,300 feet (0.6 mile) away. Also, viewers driving on SR 152 would view the Project for only a short time. Therefore, there would be no visual interruption that would dominate any valued viewshed or scenic view. Under CEQA, this impact would be less than significant.

4.15.3.4 South Segment

Impact VIS-1 Cause degradation of the foreground character or scenic quality of a visually important landscape

The viewshed along this segment is of high to very high visual quality. Most of the segment is of low sensitivity due to lack of access. Portions are visible from I-5, which is not designated as a Scenic Highway within this segment area. Portions are also visible from several residences on Arburua Road, two residences near Los Banos Creek Reservoir, and a single residence near the Dos Amigos Substation and pumping plant. However, the view of the Proposed Project would be in the middle- to background from the interstate, and all the residence except one residence on Arburua Road. That residence, which is located approximately halfway between the Project and I-5, is surrounded by vegetation that blocks all views of the surrounding area. The Dos Amigos Substation and a single transmission tower adjacent to the substation dominate the views from the nearby residence, but views of the Proposed Project to the west across I-5 are screened by vegetation. Similarly, views toward the Proposed Project from one of the residences near Los Banos Substation are also screened by vegetation. The other residence in that area is below the Los Banos Creek Reservoir within the state recreation area, where the existing transmission lines span across the canyon for approximately 2,700 feet; the Proposed Project would be visible from this residence, but it would not dominate the view.

The Proposed Project would introduce new structures adjacent to existing transmission towers that dominate views from I-5 because they are silhouetted against the sky. The new Project structures would not introduce high contrast to the viewshed. The incremental effect of adding a new transmission line adjacent to existing lines would be moderate. Therefore, there would be no degradation of the foreground character or scenic quality of the visually important landscape. Under CEQA, this impact would be less than significant.

Impact VIS-2 Introduce dominant visual changes in the landscape that are seen by highly sensitive viewer locations such as community enhancement areas or locations with special scenic, historic, recreational, cultural, and/or natural qualities that have been recognized as such through legislation or some other official declaration

Highly sensitive viewer locations in this area that could be affected by the Proposed Project include a 4.6-mile stretch of I-5, the residences in the area described above, and the recreation area near the Los Banos Creek Reservoir dam. There are no officially declared scenic overviews in the area, nor any

identified place with special scenic, historic, recreational, cultural, and/or natural qualities. I-5 is not designated as a scenic highway in this region. The Proposed Project would introduce new structures adjacent to existing transmission towers, and therefore, would not introduce high contrast to the viewshed. The incremental effect of adding a new transmission line adjacent to existing lines would be moderate. Also, viewers driving at interstate highway speeds would view the Project for only a short time. Therefore, the Proposed Project would not introduce dominant visual changes in the landscape. Under CEQA, this impact would be less than significant.

Impact VIS-3 Cause visual interruption that would dominate a unique viewshed or scenic view
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Views of the Diablo Range are high to very high in visual quality but are not unique. Very similar views can be found all along the Coast Ranges and the foothills of the Sierra Nevada in California. The Proposed Project would not dominate the view from any formally designated scenic view overlook or public park in the area surrounding this segment. The Proposed Project would introduce new structures adjacent to existing transmission towers, and therefore, would not introduce high contrast to the viewshed. The incremental effect of adding a new transmission line adjacent to two existing lines would be moderate. Therefore, there would be no visual interruption that would dominate any unique viewshed or scenic view. Under CEQA, this impact would be less than significant.

4.15.4 Corridor Alternatives

4.15.4.1 Central Segment

Patterson Pass Road Alternative

This alternative has the same number of support structures as the Proposed Project. It would be located approximately 1,000 feet farther away from the few residences south of Patterson Pass Road that would have views of the Project, as well as from travelers along I-5, which is designated as a scenic highway for this segment. Therefore, this alternative would have somewhat reduced impacts to visual resources compared to the Proposed Project, though CEQA impact significance determinations are the same.

4.15.4.2 San Luis Segment

Butts Road Alternative

This alternative corridor would have the same number of support structures as the Proposed Project. Impacts to visual resources from this alternative would be similar to that of the Proposed Project in type and context, though it would be closer to the San Joaquin Valley National Cemetery, recreation areas on the west side of the O'Neill Forebay, and at least one permanent residence near McCabe Road. Viewer sensitivity is higher than for the Proposed Project due the proximity of the National Cemetery and important recreation areas.

Because of the importance of the National Cemetery as a highly sensitive land use, the scenic overlook above the National Cemetery was chosen as a key observation point (KOP) and a visual simulation of this alternative was prepared to assess potential impacts to visual resources. As shown in Figure 4.15-1, several sets of towers from two existing 500-kV transmission lines are visible from the KOP. The two towers on the left side of the Existing Conditions picture are 2,800 feet (0.53 mile) from the KOP. The next set is 3,600 feet away, and the third set (barely visible behind the hill beyond the row of Italian cypress trees in the middle of the picture) is 4,300 feet away. The final set visible from this KOP is 4,880 feet away.



Existing Conditions



Simulation

This alternative would introduce a fourth set of towers at each of these locations, as shown in the simulation photo of Figure 4.15-1. The structures would match the existing structures, and would not be a dominant feature in the landscape due to the distance away and similarity to the existing towers. The structures would not be visible from most of the National Cemetery grounds, including the memorials, gardens and gravesites. Impacts to visual resources from this alternative would be somewhat higher for this alternative compared to the Proposed Project, because of the highly sensitive nature of the National Cemetery, but the incremental effect of adding the new towers next to the existing towers would be moderate. CEQA impact significance determinations are the same as for the Proposed Project.

West of Cemetery Alternative

This alternative corridor would have six more support structures compared to the Proposed Project for this segment. Visual sensitivity is higher than for the Proposed Project, due to the presence of the National Cemetery. Existing and simulated views of this alternative from the same KOP used for the simulation of the Butts Road Alternative are shown in Figure 4.15-2.

Structures for this alternative corridor would be approximately 2,000 feet away from the KOP, and approximately 700 feet away from the nearest gravesite. The background view in the area was significantly altered by cattle grazing of the hills, but the views towards this alternative corridor consist entirely of grasslands with no human made structures visible. The new structures would not be located next to existing transmission lines, and therefore would introduce new features that would have a high contrast with the landscape, and that would dominate the view from gardens, overlook and especially the gravesites of the National Cemetery. This intrusion into a comparatively undisturbed landscape visible from a highly sensitive land use would constitute significant and unavoidable impacts under Impacts VIS-1, VIS-2, and VIS-3.

West of O'Neill Forebay 70-kV Alternative

This alternative has the same number of support structures as the Proposed Project, but it is closer to the San Joaquin Valley National Cemetery and important recreation facilities on the west side of O'Neill Forebay than the Proposed Project. It would be adjacent to two existing transmission lines in the same corridor as the Butts Road alternative described above. Structures for this alternative would be much smaller than the existing structures, and would be more than 3,300 feet away from the scenic overlook above the National Cemetery. They would not be visible from most of the National Cemetery grounds, including the gardens, memorials and gravesites. This alternative therefore would result in a minor incremental impact. However, because of the proximity of the National Cemetery and existing recreation facilities, this alternative would have a somewhat greater adverse effect on visual resources compared to the Proposed Project. CEQA impact significance determinations are the same as the Proposed Project.

4.15.4.3 South Segment

San Luis to Dos Amigos Alternative

This alternative has the same number of support structures as the Proposed Project, though it would be located approximately 1,000 feet farther to the west. No residences in the area would have views of the structures within this alternative corridor, and it would not be visible to travelers along I-5. Therefore, this alternative would have the same impacts to visual resources as the Proposed Project, and CEQA impact significance determinations are the same.



Figure 4.15-2
KOP 2 - West of Cemetery Alternative
Existing Conditions and Simulation

Billy Wright Road Alternative

This alternative corridor would have eight more support structures than the Proposed Project, and would permanently disturb 4 more acres of land. Impacts to visual resources from this alternative would be similar to that of the Proposed Project in type and context; however, the intensity would likely be slightly greater than the Proposed Project due to greater number of support structures. The structures for this alternative would be located adjacent to two existing transmission lines, and therefore the incremental impact of this alternative would be minor. This alternative route would cross over portions of the state recreation area near the western end of Los Banos Creek Reservoir. This area is remote and is difficult to access, but is near areas of very high historical qualities and viewer sensitivity.

This alternative would introduce new structures adjacent to existing transmission lines and towers, and therefore, would not introduce high contrast to the viewshed. The incremental effect of adding a new transmission line adjacent to existing lines would be moderate. The area is also difficult to access, requiring a 5-mile plus hike or a boat ride the length of Los Banos Reservoir, but the immediate vicinity near the alternative corridor is highly altered due to the reservoir, and is of low interest to the few hikers who traverse the area to reach the Path of the Padres trail. Therefore impacts to visual resources under this alternative would be less than significant under CEQA. CEQA impact significance determinations for all other visual impacts on all portions of this alternative route are the same as those described for the Proposed Project.

4.15.5 No Action/No Project

Under the No Action/No Project Alternative, Western would not construct the SLTP. No new facilities would be built; therefore, there would be no direct or indirect impacts to visual resources.

4.16 Water Resources and Floodplains

4.16.1 Thresholds of Significance

The Proposed Project and alternatives would have significant, adverse effects on water resources and floodplains if any activity associated with their construction or operation would result in:

- Violation of any water quality standards or waste discharge requirements (Impact WR-1);
- Groundwater quality degradation that causes groundwater quality to exceed federal or state standards (Impact WR-2);
- Groundwater depletion or interference with groundwater recharge that adversely affects existing or proposed uses of the groundwater aquifer (Impact WR-3);
- Alteration of the existing drainage pattern of the site or area that would result in substantial on- or off-site erosion or siltation, or that would substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site (Impact WR-4); or
- Modification of a floodplain, which would impede or redirect flood flows that would result in property damage on- or off-site (Impact WR-5).

4.16.2 Environmental Protection Measures

- At completion of work and at the request of the landowner/manager, all work areas except access roads will be scarified or left in a condition that will facilitate natural or appropriate vegetation, provide for proper drainage, and prevent erosion.
- Erosion control measures will be implemented to prevent loss of soil. Construction will be in conformance with Western's Integrated Vegetation Management Environmental Guidance Manual.
- Excavated material or other construction materials will not be stockpiled or deposited near or on stream banks, lake shorelines, or other watercourse perimeters.
- Non-biodegradable debris will be collected and removed from the easement daily and taken to a disposal facility. Slash and other biodegradable debris will be left in place or disposed of.
- All soil excavated for structure foundations will be backfilled and tamped around the foundations, and used to provide positive drainage around the structure foundations. Excess soil will be removed from the site and disposed of appropriately. Areas around structure footings will be reseeded with native plants.
- Wherever possible, new structures and access roads will be sited out of floodplains. Bridges will be used at new stream crossings wherever possible. If avoidance is not possible, Western will consult with USACE and obtain permits as required.
- Construction vehicle movement outside of the easements will be restricted (to the extent feasible) to approved access or public roads.
- Where feasible, all construction activities will be rerouted around wet areas while ensuring that the route does not cross sensitive resource areas.
- If wet areas cannot be avoided, Western will use vehicles, ground mats, and equipment that minimize ground impacts.

- All instream work, such as culvert replacement or installation, bank recontouring, or placement of bank protection below the high-water line, will be conducted during no-flow or low-flow conditions and in a manner to avoid impacts to water flow, and will be restricted to the minimum area necessary for completion of the work.
- Runoff from the construction and O&M sites will be controlled and meet RWQCB stormwater requirements and the conditions of a construction stormwater discharge permit. A stormwater pollution prevention plan will be prepared and implemented.
- All equipment used below the ordinary high-water mark will be free of exterior contamination.
- All contaminated discharge water created by construction and O&M activities (e.g., concrete washout, pumping for work area isolation, vehicle wash water, drilling fluids) will be contained and disposed of in accordance with applicable federal, state, and local regulations.
- All fill or rip-rap placed within a stream or river channel will be limited to the minimum area required for access or protection of existing Western facilities.
- All equipment will be stored, fueled, and maintained in vehicle staging areas 300 feet or the maximum distance possible from any aquatic habitat (vernal pool, vernal pool grassland, seasonal wetland, seep, spring, pond, lake, river, stream, or marsh) and no closer than 200 feet unless a bermed (no ground disturbance) and lined refueling area is constructed and hazardous-material absorbent pads are available in the event of a spill. Vehicles and construction equipment will be inspected daily for fluid leaks before leaving staging areas during construction and O&M activities. Fluid leaks will be repaired before equipment is moved from staging areas.
- If a pesticide label stipulates a buffer zone width for protection of natural resources that differs from that specified in a project mitigation measure or EPM, the buffer zone width that offers the greatest protection will be applied.
- A hazardous-spill plan will be developed prior to construction and will remain in effect for all O&M activities. The plan will describe what actions will be taken in the event of a spill of toxic or hazardous materials. The plan will incorporate preventive measures to be implemented for vehicle and equipment staging, cleaning, maintenance, and refueling, and for containment management and storage of hazardous materials, including fuel. In the event of a contaminant spill, work at the site will immediately cease until the contractor has contained and mitigated the spill. The contractor will immediately prevent further contamination, notify appropriate authorities, notify Western's regional environmental manager, and will mitigate damage as appropriate. Adequate spill containment materials, such as oil diaper mats and hydrocarbon cleanup kits, will be available on site at all times, as will containers for storage, transportation, and disposal of contaminated absorbent materials.

4.16.3 Proposed Project

This impact analysis is based on an assessment of baseline conditions relevant to the Project area, including ambient water quality, beneficial uses identified in the Central Valley Regional Board's Basin Plan, and existing impairments to waterbodies as listed on the Clean Water Act (CWA) 303d list of impaired and threatened waters that have been identified and reported to the U.S. Environmental Protection Agency (USEPA), which are presented in Section 3.16.1.

Table 4.16-1 presents the number of National Hydrography Dataset named and unnamed streams that lie within the study area for each segment of the Proposed Project. These study areas are defined in Section 3.1 and include the Proposed Project corridor as well as a sufficiently large buffer to capture the potential impacts of new and improved access road construction as well as potential downstream impacts.

Table 4.16-1. National Hydrography Dataset Streams Crossed By Segment

Segment	Named Streams and Canals Crossed	Unnamed Streams Crossed
North Segment	4	15
Central Segment	16	78
San Luis Segment 500-kV	4	17
San Luis Segment 70-kV	3	15
South Segment	5	56

The Proposed Project could affect water resources and floodplains through ground disturbance associated with construction and O&M activities, including operation of heavy equipment, grading and vegetation clearing for access roads, site leveling, auguring of transmission tower foundations, and other infrastructure excavations. These activities would have the potential to cause both direct and indirect adverse effects to water resources. The equipment used and the length of construction is discussed in detail in Section 2.1.3. Indirect impacts could include soil disturbance that leads to subsequent erosion and sedimentation following a storm event.

Impact WR-1 Violate any water quality standards or waste discharge requirements.

Construction of the Proposed Project would include soil-disturbing activities, such as leveling and excavation of the transmission tower sites as well as grading and improvement of existing access roads. This soil disturbance could lead to increased erosion and sedimentation. Additionally, potentially hazardous materials such as fuel, engine oil, and lubricants could be leaked or accidentally spilled onto the ground or into waterways during construction of the Proposed Project. Adverse effects to water resources could occur during operations and maintenance of the Proposed Project due to soil-disturbing activities such as re-grading of access roads and vegetation removal. Major repair work, such as replacement of towers or conductors, would be nearly identical to that of new construction, as described in Section 2.1.3. Because adverse effects from such work would be similar to or less severe in nature and duration than that of new construction as described above, adverse effects to water resources would be negligible during the operation and maintenance phase of the Proposed Project. In conformance with Western's EPMs and Construction Standard 13, all work areas except access roads will be scarified or left in a condition that will facilitate natural or appropriate vegetation, provide for proper drainage, and prevent erosion. Stockpiles of excavation material will be protected from erosion and protective measures will be taken to prevent and/or quickly respond to leaks or accidental spills of hazardous materials. All required permits will be obtained prior to commencement of construction activities in order to ensure protection of water quality within the Project area. Therefore, any potential impacts to water quality associated with construction of the Proposed Project would be negligible. Under CEQA, this impact would be less than significant.

This impact would be the same in the North, Central, San Luis, and South segments.

Impact WR-2 Degrade groundwater quality such that state or federal standards are exceeded.

A portion of the study area is underlain by areas of shallow groundwater. Dewatering may be required during tower footing excavation and tower installation. No dewatering is expected during routine O&M activities. In conformance with Western's EPMs and Construction Standard 13, all required dewatering and discharge permits would be obtained prior to commencement of construction activities. Any water that is produced during dewatering activities will be tested and, if necessary, treated prior to discharge. In

addition, any leaks or accidental spills of hazardous materials will be quickly contained and removed per Western's Spill Prevention Notification and Cleanup Plan, and no hazardous materials would enter the groundwater. Therefore, any potential adverse effects to groundwater quality, associated with construction of the Proposed Project, would be negligible. Under CEQA, this impact would be less than significant.

This impact would be the same in the North, Central, San Luis, and South segments.

Impact WR-3 Cause groundwater depletion or interference with groundwater recharge that adversely affects existing or proposed uses of the groundwater aquifer.
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Any water use for construction or O&M activities (such as for dust suppression or concrete mixing) will be purchased through an appropriate water provider or authority. Groundwater resources will not be depleted by construction or O&M of the Proposed Project. In addition, the creation of new impervious surfaces would be limited to tower footings, and would not interfere with groundwater recharge. Therefore, impacts to groundwater levels associated with construction and O&M of the Proposed Project would be negligible. Under CEQA, this impact would be less than significant.

This impact would be the same in the North, Central, San Luis, and South segments.

Impact WR-4 Cause alteration of the existing drainage pattern of the site or area that would result in substantial on- or off-site erosion or siltation, or that would substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site.

Structures would be placed outside of stream channels and floodplains where possible. Transmission towers would be located and engineered so as not to block or substantially alter the natural drainage pattern. In accordance with Western's EPMs and Construction Standard 13, culverts or bridges would be installed where needed to avoid surface water impacts during construction of transmission line structures. All construction activities would be conducted in a manner to avoid impacts to water flow. Excavated material or other construction materials would not be stockpiled or deposited near or on stream banks, lake shorelines, or other watercourse perimeters. All soil excavated for structure foundations would be backfilled and tamped around the foundations, and used to provide positive drainage around the structure foundations. Crossing of any stream or other waterway will occur in compliance with applicable laws, and with approval of applicable landowners and permitting agencies, thereby protecting waterways from being inappropriately altered or diverted. Therefore, impacts to the existing drainage patterns associated with construction and O&M of the Proposed Project would be negligible. Under CEQA, this impact would be less than significant.

This impact would be the same in the North, Central, San Luis, and South segments.

Impact WR-5 Result in modification of a floodplain, which would impede or redirect flood flows that would result in property damage on- or off-site.
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The Proposed Project would place new structures outside of floodplains where possible. In areas where floodplains cannot be avoided, Western would engineer transmission towers to withstand a 100-year flood. Additionally, new structures would be located and designed so as not to impede flood flows. All construction within a designated 100-year floodplain will be undertaken in consultation with the USACE. No floodwater will be blocked, nor will floodwater be diverted outside of an existing floodplain.

Therefore, construction and O&M of the Proposed Project will have a negligible impact on floodways and floodplains. Under CEQA, this impact would be less than significant.

This impact would be the same in the North, Central, San Luis, and South segments.

4.16.4 Corridor Alternatives

Table 4.16-2 presents the number of National Hydrography Dataset named and unnamed streams crossed by the study area for each Alternative. These study areas, as defined in Section 3.1, include the alternative corridor as well as a sufficiently large buffer to capture the potential impacts of new and improved access road construction as well as potential downstream impacts.

Table 4.16-2. National Hydrography Dataset Streams Crossed by Alternative

Alternative	Named Streams and Canals Crossed	Unnamed Streams Crossed
Patterson Pass Road	16	86
Butts Road	4	25
West of Cemetery	5	32
West of O'Neill Forebay 70-kV	3	11
San Luis to Dos Amigos	5	56
Billy Wright Road	5	82

4.16.4.1 Central Segment

Patterson Pass Road Alternative

This alternative has nine more miles of new access roads and the same number of support structures as the Proposed Project, but the alternative study area crosses eight more unnamed streams compared to the Proposed Project. Due to the increased amount of ground disturbance, this alternative would have slightly greater adverse effects to water resources and floodplains as the Proposed Project during construction and O&M. Direct and indirect impacts for WR-1 through WR-5 would be minor. Under CEQA, direct and indirect impacts for WR-1 through WR-5 would be less than significant.

4.16.4.2 San Luis Segment

Butts Road Alternative

This alternative corridor would be 0.5 mile longer than the Proposed Project, would have two more support structures, and would increase new access roads by 2.0 miles. The alternative study area crosses eight more unnamed streams compared to the Proposed Project. Soil disturbance would be increased compared to the Proposed Project. In addition, the number of receiving waters within the alternative study area would be more in comparison to the Proposed Project. Therefore, potential impacts to water resources and floodplains also would be more severe compared to the Proposed Project. Direct and indirect impacts for WR-1 through WR-5 would be minor. Under CEQA, direct and indirect impacts for WR-1 through WR-5 would be less than significant.

West of Cemetery Alternative

This alternative corridor would be 1.2 miles longer than the Proposed Project, would have six more support structures, and would increase new access roads by 9.0 miles. The alternative study area crosses one additional named stream and 15 more unnamed streams compared to the Proposed Project. Soil

disturbance would be increased compared to the Proposed Project, and the terrain would be slightly steeper than the Proposed Project study area for this segment, which would slightly increase the potential for erosion. This increased potential for erosion is coupled with the increased number of receiving waters within the alternative study area compared to the Proposed Project. Potential impacts to water resources and floodplains would be more severe compared to the Proposed Project. Direct and indirect impacts for WR-1 through WR-5 would be minor. Under CEQA, direct and indirect impacts for WR-1 through WR-5 would be less than significant.

West of O'Neill Forebay 70-kV Alternative

This alternative is the same length, has the same length of new access roads, and has the same number of support structures as the Proposed Project. The alternative study area crosses four fewer unnamed streams compared to the Proposed Project. Due to the reduction in the number of receiving waters, this alternative would have slightly reduced impacts to water resources and floodplains during construction and O&M as the Proposed Project. Direct and indirect impacts for WR-1 through WR-5 would be minor. Under CEQA, direct and indirect impacts for WR-1 through WR-5 would be less than significant.

4.16.4.3 South Segment

San Luis to Dos Amigos Alternative

This alternative has the same length of new access roads, the same number of support structures, and crosses the same number of named and unnamed streams as the Proposed Project, and therefore would have essentially the same impact to water resources and floodplains during construction and O&M. Direct and indirect impacts for WR-1 through WR-5 would be minor. Under CEQA, direct and indirect impacts for WR-1 through WR-5 would be less than significant.

Billy Wright Road Alternative

This alternative corridor would be 1.5 miles longer than the Proposed Project, would have 8 more support structures, would need 3.0 miles of additional new access roads, and the alternative study area would cross 26 more unnamed streams compared to the Proposed Project. Additionally, the topography of this alternative corridor is slightly steeper than the Proposed Project corridor for this segment, and therefore, the potential for erosion would be increased slightly. Potential impacts to water resources and floodplains would be substantially more severe compared to the Proposed Project. However, direct and indirect impacts for WR-1 through WR-5 would remain minor. Under CEQA, direct and indirect impacts for WR-1 through WR-5 would be less than significant.

4.16.5 No Action/No Project

Under the No Action/No Project Alternative, Western would not construct the SLTP. No new facilities would be built, and therefore no impacts to water resources and floodplains would occur.

4.17 Cumulative Effects Analysis

Cumulative impacts are defined by the CEQ (40 CFR §1508.7) as "... the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such actions." (See also CEQA Guidelines, § 15130.)

Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time." 40 CFR §1508.7; see also CEQA Guidelines, § 15130. Under NEPA, both context and intensity are considered. Among other considerations when considering intensity is "[w]hether the action is related to other actions with individually minor but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts." 40 CFR §1508.27(b)(7)

To determine the cumulative effects in the Project study area, a review was completed of past, present, and reasonably foreseeable future projects in the vicinity of the Project area and an analysis made of their short- and long-term incremental effects on the local environment.

Geographic Scope

The project list includes those projects found within a geographic area sufficiently large to provide a reasonable basis for evaluating cumulative impacts. The area over which the cumulative scenario is evaluated may vary by resource, because the nature and range of potential effects vary by resource (e.g., air quality impacts tend to disperse over a large area or region while biological resources impacts are typically more location specific). This spatial area is identified as the geographic scope for the analysis of cumulative impacts related to a particular resource.

The analysis of cumulative effects considers a number of variables including geographic (spatial) limits, time (temporal) limits, and the characteristics of the resource being evaluated. The geographic scope of the analysis is based on the nature of the geography surrounding the Project and the characteristics and properties of each resource and the region to which they apply. In addition, each project in a region will have its own implementation schedule, which may or may not coincide or overlap with the proposed SLTP schedule. This is a consideration for short-term impacts from the Proposed Project. However, to be conservative, the cumulative analysis assumes that all projects in the cumulative scenario are built and operating during the operating lifetime of the Proposed Project.

Timeframe

The timeframe of past, present, and probable future projects was determined as follows:

- **Past projects.** Projects completed within the last ten years.
- **Present projects.** Projects that are active, producing, or in operation as of November 1, 2013.
- **Reasonably foreseeable future projects.** Projects anticipated to have impacts within 5 years.

List of Projects for Cumulative Analysis

Table 4.17-1 lists the past, present, and reasonably foreseeable future projects that may have impacts that could be combined with the impacts of the Proposed Project and alternatives to result in cumulative effects.

Table 4.17-1. Past, Present and Reasonably Foreseeable Future Actions that Occur in the Project Area

Project Name/Applicant	Project Description	Status/ Schedule	Project Location
California High Speed Rail, California High Speed Rail Authority and Federal Rail Administration	Proposed project to develop a 800-mile system of high-speed trains from southern to northern California; including two identified spurs at Altamont Pass or Pacheco Pass.	Statewide Program EIR/EIS published August 2005. San Jose to Merced Section under project level environmental review; NOP published August 2009.	The Altamont Pass spur would cross the SLTP in the San Luis Segment north of O'Neill Forebay. The Pacheco Pass spur would cross the SLTP in the North Segment near Tracy.
Bay Delta Conservation Plan	A 50-year conservation strategy to restore and protect the Sacramento–San Joaquin Delta's ecosystem health, water supply, and water quality.	Environmental Review Process: Draft EIR/EIS published in December 2013 with an anticipated re-circulated draft in 2015.	Consists generally of the statutory Delta, the Yolo Bypass north of the statutory Delta, and Suisun Marsh as well as the State Water Project and Central Valley Project export areas. The proposed underground tunnels terminate near the City of Tracy.
Tracy Biomass Power Plant Project, GWF Energy LLC	Construction, operation, and maintenance of a 169 MW simple-cycle power plant on a 40-acre site.	Licensed; in compliance phase. Operational: June 1, 2003.	Near the North Segment of SLTP in an unincorporated portion of San Joaquin County, east of the City of Tracy.
Crow's Landing Airport, Stanislaus County	Reuse of the former Crows Landing Naval Air Facility as a public-use, general aviation (GA) airport and mixed-used development.	Land Use Compatibility Plan published June 2013.	Near the Central Segment of the SLTP in Stanislaus County, about 28 miles southeast of Tracy, and 42 miles west of San Jose.
Quinto Solar Project, SunPower Corporation	Proposed 110 megawatt (MW) solar photovoltaic (PV) energy generation facility on a 1,012-acre site. Includes the proposed construction, operation, and maintenance of a 4-acre, 230-kV switching station for interconnection.	The Proposed project would be constructed over 16 months, starting in summer 2013, with full operation anticipated by late 2014.	Near the San Luis Segment of the SLTP in southwestern Merced County, west of I-5, north of SR 152, and 1 mile northwest of the unincorporated community of Santa Nella.
San Luis Reservoir Low Point Improvement Project, U.S. Bureau of Reclamation	Proposed reservoir and system improvement project aimed to optimize the water supply benefits of San Luis Reservoir while reducing additional risks to water users as part of the Central Valley Project.	NOI/NOP published in September 2008. Plan Formulation Report published in January 2011 as an interim feasibility study.	Near the San Luis Segment of the SLTP at the San Luis Reservoir.
B.F. Sisk (San Luis) Dam Corrective Action Project, U.S. Bureau of Reclamation and the California Department of Water Resources	Proposed project to modify B.F. Sisk Dam to mitigate potential safety concerns identified in the ongoing Corrective Action Study (CAS).	Environmental Review Process: Scoping Meetings held October 2009.	Near the San Luis Segment of the SLTP on the east side of the San Luis Reservoir.
Grassland Bypass Project, U.S. Bureau of Reclamation and the San Luis and Delta Mendota Water Authority	Separation of unusable agricultural drainwater discharged from the Grassland Drainage Area from wetland water supply conveyance channels.	Implementation and monitoring phase. Final EIS published September 2001.	Near the Central Segment of the SLTP in southwestern Merced County, northwest of the City of Merced, the area surrounding the convergence of the San Joaquin River and the Merced River.

Table 4.17-1. Past, Present and Reasonably Foreseeable Future Actions that Occur in the Project Area

Project Name/Applicant	Project Description	Status/ Schedule	Project Location
Wright Solar Park, Frontier Renewables	Proposed 200-MW solar PV power plant located on 1,400 acres of leased and purchased agricultural lands in unincorporated Merced County.	Draft Environmental Impact Report published July 2014.	Near the South Segment of the SLTP in western Merced County about 4.5 miles southeast of Santa Nella, southwest of the intersection of I-5 and SRs 33/152, on the south side of Billy Wright Road.
San Luis Renewables, LLC Solar Generation Project	Solar generation facility. There may also be a 70-kV transmission line constructed north of Hwy 152, from the San Luis Gianelli Pumping Plant to the O'Neill Substation switchyard to accommodate the solar project.	NOP not yet published.	In the San Luis Segment, adjacent to the O'Neill Forebay.
500-kV transmission lines. Owners: Black Hills Energy, Pacific Gas and Electric Co., Western Area Power Administration	Existing transmission lines and associated substations.	Existing	North Segment, Central Segment, San Luis Segment, South Segment.
230-kV transmission lines. Owners: Modesto Irrigation District, Pacific Gas and Electric Co., Sacramento Municipal Utility District, Western Area Power Administration	Existing transmission lines and associated substations.	Existing	North Segment, Central Segment, San Luis Segment, South Segment.
115-kV transmission lines. Owners: Pacific Gas and Electric Co., City & County of San Francisco	Existing transmission lines and associated substations.	Existing	North Segment, Central Segment, San Luis Segment.
69-kV transmission lines. Owners: Pacific Gas and Electric Co., Western Area Power Administration	Existing transmission lines and associated substations.	Existing	North Segment, Central Segment, San Luis Segment, South Segment.

4.17.1 Planning Influences in the Project Area

Table 4.17-2 lists the plans and programs that will influence development in the Project area.

Table 4.17-2. Planning Influences in the Project Area

Plan or Program	Description	Plan Area
College Park at Mountain House Specific Plan III, San Joaquin County	Plan for future development of about 816 acres within the 4,784-acre Mountain House Master Plan community.	Located in San Joaquin County, west of Mountain House Parkway, North of I-205, south of Grant Line Road, and east of the Alameda County line.

Table 4.17-2. Planning Influences in the Project Area

Plan or Program	Description	Plan Area
San Luis Reservoir State Recreation Area Resource Management Plan/General Plan and EIS/EIR, California Dept. of Parks and Recreation and the U.S. Bureau of Reclamation.	Proposed joint management plan for the development and management of the recreation resources and areas on land owned by the Bureau of Reclamation surrounding the San Luis Reservoir and Los Banos Reservoir. Final Draft was published in June 2014.	Located in southwestern Merced County, west of I-5, north of SR 152. The plan area includes the San Luis Reservoir, O'Neill Forebay, Los Banos Reservoir and surrounding areas.
The Villages of San Luis Community Plan, Merced County.	Plan to guide growth and development of a 6,200-acre Specific Urban Development Plan. The plan includes a potential development of over 14,000 housing units and includes an urban reserve area held for the potential development of another 2,000 housing units. Plan approved in 2007.	Located west of I-5 along SR-152 and SR-33 in western Merced County.
Fox Hills Community Specific Plan Update, Merced County.	Plan to expand the county's range of housing stock, provide local serving commercial uses for new residential development, and expand on the recreation oriented theme of the original Specific Plan. Includes land use designations of low and medium density residential (total capacity of 3,460 dwelling units), commercial mixed-use, general commercial, parks and trails, recreation, and open space for wildlife conservation and passive recreation. Plan approved in 1993.	Located in western Merced County, east of I-5, west of the San Luis Canal, and just south of Pioneer Road.
Tracy Hills Specific Plan, City of Tracy	Plan including 6,175-acre site to enable comprehensive planning through the integration of multiple land uses, physical design features, and vehicle and pedestrian movement focused around an urban center.	Southwest of the City of Tracy, along I-580.

4.17.2 Agriculture

The Proposed Project is in compliance with Williamson Act and other local zoning authorities and would therefore not contribute to a cumulative impact in this regard. Cumulative impacts could result from the permanent conversion of Important Farmlands or the preclusion of agricultural activities. Agriculture operations would continue within the proposed SLTP easements and transmission infrastructure would be sited to avoid Important Farmlands. Furthermore, the Project's construction and maintenance activities are short-term and spread out over a large geographic area. Therefore, the Proposed Project's contribution to cumulative effects would be less than cumulatively considerable.

4.17.3 Air Quality and Climate Change

Emissions from the Proposed Project would combine with the emissions of projects listed in Table 4.17-1 if construction work and emissions occur at the same time. In the cumulative setting, all emissions from existing sources in the region plus foreseeable changes to emissions associated with growth in the region would continue to contribute to nonattainment conditions for ozone, PM10, and PM2.5.

Construction and operation of the Proposed Project, along with the projects listed in Table 4.17-1 could cause significant cumulative impacts to air quality. Project construction and operation activities would not individually result in exceedance of air quality or emissions standards in the region (Impact AQ-1), and the collective or combined air quality effect would be less than significant (Impact AQ-3). Similarly, the Project would be consistent with regional air quality plans that are in place to ensure progress

towards attainment (Impact AQ-5), and the regional impact would be subject to mitigation to manage construction activities to achieve emission rates that are below the applicable thresholds (Impact AQ-6).

In localized areas of impact, the incremental contribution of construction emissions would be limited to the Project construction duration of approximately 18 months and would not occur near any particular receptor for more than a few weeks (Impact AQ-2). The localized potential exposure of sensitive receptors to construction-related HAP emissions and pollutant concentrations would be negligible (Impact AQ-4). Project emissions would be sufficiently reduced through the implementation of the Project EPMs and mitigation such that any contribution would be minor and would not be cumulatively considerable. No additional mitigation for cumulative air quality impacts is necessary.

Greenhouse gas emissions contribute, by their nature, to cumulative impacts. The analysis presented for Impact AQ-7 and Impact AQ-8 in Section 4.3 (Air Quality and Climate Change) is a cumulative impact assessment because GHG emissions contribute, by their nature on a cumulative basis, to the adverse environmental impacts of global climate change.

Although the Project could combine with the effects of the GHG emissions from the cumulative projects listed in Table 4.17-1 to cause significant cumulative GHG impacts, the incremental contribution of the Project would not generate substantial levels of GHG emissions during construction or over the long-term. Due to the limited levels of Project GHG emissions, the Project would not contribute in a cumulatively considerable manner to GHG emissions or global climate change. No additional mitigation for cumulative climate change impacts is necessary. Additionally, refer to the discussion under impacts AQ-7 and AQ-8 in Section 4.3 (Air Quality and Climate Change) regarding cumulative GHG emissions.

4.17.4 Biological Resources

Past and present actions have resulted in extensive cumulative changes to native vegetation communities and the occurrence and distribution of plants and wildlife within the Project area and the region. Native vegetative communities in the general vicinity have been substantially altered by agricultural conversion, ranching, residential and commercial uses, water impoundments and conveyance systems, road construction, and construction of the various utility infrastructure. Past and present actions such as water infrastructure, agriculture, ranching, transportation, and utility infrastructure are expected to continue in the region. In addition, energy development projects (including renewable energy projects), recreation area management, and future urban and residential development are reasonably foreseeable actions in the Project region that would adversely affect biological resources.

Under Impact BIO-1, the Project's effects to special-status plants and wildlife could include loss of individuals, loss or degradation of habitats (including designated critical habitat for the California red-legged frog and the delta smelt), and disturbance to wildlife from human activities. The Project's impacts to native vegetation communities, including sensitive communities (Impact BIO-2) and jurisdictional wetlands (Impact BIO-4) could include direct loss and indirect effects such as the spread of nonnative and invasive weeds, degradation of water quality, and erosion and sedimentation. Other projects in the region would have similar effects. Mitigation Measures BIO-1 through BIO-32 would minimize the Proposed Project's impacts through a series of avoidance and minimization measures and compensatory mitigation for impacts that cannot be avoided. Therefore, the Proposed Project's incremental contribution to adverse cumulative effects to special-status species and their habitats, native plant communities, and jurisdictional resources would not be cumulatively considerable.

The CDFW commented during scoping that the area from the Los Banos Creek Reservoir to a point just north of San Luis Reservoir (in the San Luis and South segments) is a critical migration corridor for San

Joaquin kit fox, and that creation of the San Luis Reservoir and O'Neill Forebay created a substantial barrier to movement (Impact BIO-3). Busy highways such as State Routes 152 and 33 and Interstate 5, as well as existing urban development, are additional major barriers to movement for this species. Other species in the region, such as Tule elk, are also impeded by these existing features. However, the Proposed Project's impacts to habitat are primarily localized and short-term, the widely spaced Project towers would not create barriers to wildlife movement, and Project facilities would be engineered to current industry standards to minimize collision and electrocution risks to birds. Therefore, the Proposed Project would not contribute substantially to regional cumulative impacts resulting from interference with wildlife movement. The Proposed Project's incremental contribution to adverse cumulative wildlife movement impacts would not be considerable.

The Proposed Project would not conflict with any local policies or ordinances protecting biological resources (Impact BIO-5) or with the provisions of an adopted habitat conservation plan (Impact BIO-6), and therefore would not contribute to cumulative impacts for these issues. Although the Project would cross several conservation easements, impacts within easements would be avoided to the extent feasible (Mitigation Measure BIO-2), and Western would comply with all applicable requirements within conservation easements (Mitigation Measures BIO-28 and BIO-31). Therefore, the Proposed Project's incremental contribution to adverse cumulative impacts to conservation easements would not be considerable.

Affected biological resources are similar between corridor alternatives, and no corridor alternative would introduce a new impact not already considered for the Proposed Project. The differences between alternatives are in the magnitude of impacts. Cumulative impacts to biological resources would be similar across all alternatives.

4.17.5 Cultural Resources

Loss of cultural resources is a concern in San Joaquin Valley and the Diablo Range foothills. Very few archaeological resources have been investigated in this area and loss of any intact cultural deposits without data recovery is significant. Future agricultural, infrastructural, and urban development projects may result in similar direct and indirect impacts to cultural resources, including damage, degradation to, or loss of resources. These may be unique archaeological resources as defined by CEQA or resources of archaeological, tribal, or historical value that is listed, or eligible for listing, on the National Register or California Register. Individually minor but collectively significant actions (usually in the form of ground disturbance) may have a cumulatively considerable impact on cultural resources. Types of resources that are generally not considered eligible to the National or California Registers may become eligible as impacts from this and future projects make them rarer. When considered together with the SLTP, these projects may result in a significant cumulative impact. Due to the Project EPMs and MM-CUL-1, the contribution from the SLTP to cumulative impacts to National Register- or California Register-eligible resources or unique archaeological resources would be minor. Under CEQA, the project's contribution to impacts on cultural resources would not be cumulatively considerable.

To date, no human remains or burials have been identified within the Proposed Project corridor; therefore, there would be no disturbance to these remains. However, investigation or earth-disturbing activities performed prior to construction could reveal the presence of human remains. Impacts to human remains would be mitigated through MM-CUL-2. Therefore, there would be no adverse effects on such resources and the project's contribution to this impact would not be cumulatively considerable. However, if human remains are discovered and the disturbance was an issue with the descendant community, it may be cumulatively significant.

4.17.6 Environmental Justice

The Proposed Project would not contribute to cumulative impacts to environmental justice communities in the Project area. Currently, the study area contains one census block group with a minority population greater than 50 percent and no low-income population that exceeds the minimum threshold. The high minority population is located in the North Segment of the Project area. The past, present, and foreseeable future developments in the Project area, presented in Table 4.17-1, do not overlap with this portion of the Project corridor. Although other projects in the cumulative analysis study area could result in adverse effects to socioeconomics, the Proposed Project was not found to result in any adverse effects to socioeconomics and therefore would not combine with the adverse effects of other projects to result in disproportionate cumulatively considerable effects to minority or low-income populations.

4.17.7 Geology, Soils, and Mineral Resources

Past, present, and reasonably foreseeable future agricultural, urban development, infrastructure, and energy development projects may result in exposure of people or structures to geologic hazards, soil loss and accelerated sedimentation, direct and indirect impacts to soil productivity and vegetative cover, direct and indirect impacts to locally important mineral resource recovery sites, and direct and indirect impacts to structural stability due to unstable soils. However, because the EPMs and mitigation measures listed herein would reduce the geology, soils, and mineral resources impacts of the Proposed Project to less than significant, the incremental contribution of the Proposed Project to any cumulative impact would be minor. The cumulative impact of the Proposed Project combined with past, present, and reasonably foreseeable future projects would remain minor. Under CEQA, the project's contribution to this impact would not be cumulatively considerable. No additional mitigation for cumulative impacts is necessary.

4.17.8 Land Use

Land use in the project vicinity has incrementally changed due to cumulative past and present development, and this would be expected to continue with the cumulative future development identified in Table 4.17-1. Past and present actions have cumulatively established the current land use patterns in Alameda, San Joaquin, Stanislaus, and Merced Counties. These actions have introduced predominantly agricultural (mainly crops and livestock grazing) and rural residential uses throughout the area, with commercial and residential uses near the San Luis Reservoir and the community of Mountain House.

Land use in the area also has been cumulatively affected by development of transportation and utility infrastructure throughout the area, including numerous roads, railroads, pipelines, and transmission lines. More recently, wind energy development has occurred in the Altamont Pass area, a biomass power plant was built near Tracy, and several solar power projects are planned near the San Luis Reservoir. Continued renewable energy development, including new solar panels, wind turbines, transmission lines, substations, and roads that would be built for these facilities, could result in the permanent conversion of thousands of acres of mainly agricultural land to an energy production use. While agricultural uses could largely continue in areas around these facilities, renewable energy development is a significant cumulative change in land use in the project vicinity.

The Proposed Project would have less than significant impacts under impacts LU-2, LU-3, and LU-6. With regard to Impact LU-1, the Proposed Project would widen the total width of existing utility corridors along the entire route. An additional utility corridor would be compatible with existing land uses, allowing continued use as farming and ranching lands. The addition of the Proposed Project would effectively reduce the amount of land available for some other types of land uses, especially residential

development; but residential development would be an incompatible use within the lands zoned for agricultural use in the four counties affected by the Project, and therefore increased residential or commercial development within the area is not anticipated in the near term. However, conditions and land use planning could change, and future residential development could occur in the Project Area.

Given the amount of land available in the Project region for conversion to other land uses, the relatively small amounts of land that would be restricted from conversion for residential development would have only a minor effect on the counties' ability to change land uses to allow other types of development, if they conclude that doing so is appropriate. Therefore, the Project would not contribute to cumulatively considerable impacts under current planning guidelines.

The Proposed Project would result in significant and unavoidable impacts to the Jasper Sears OHV Use Area under Impacts LU-1 and LU-4 from construction and operation of the new Los Banos West Substation. The addition of the new substation within the established Jasper Sears OHV Use Area would result in an incompatibility with the provisions of the existing SLRSRA RMP/GP. Therefore, the Proposed Project would contribute to cumulative impacts to similar land uses and designations. Mitigation to modify existing facilities at the OHV Use Area to maintain existing operations would minimize conflicts. However, this mitigation would be implemented by agencies other than Western or the Authority; therefore, its feasibility is uncertain and the impacts remains cumulatively considerable.

Regarding the other potential impacts to land use, the Proposed Project would be located adjacent to existing transmission lines, which are an existing and allowed use in all areas of the Project. The Project would not block movement of people and animals through these lands, conflict with the land management objectives of the administering agency, or result in nuisance impacts, and all disturbances will be restored to pre-project conditions, at the discretion of the landowner. Therefore, the Project's contribution to cumulative effects would be less than cumulatively considerable. No additional mitigation for cumulative impacts is necessary.

4.17.9 Noise

Cumulative noise impacts in the project vicinity typically occur when noise receptors are exposed to noise from sources at about the same time. There could be cumulative noise impacts if these actions are undertaken simultaneously and close to each other. Construction noise from the Proposed Project would temporarily add to noise from other activities in the immediate vicinity of portions of the Proposed Project, such as traffic on nearby roads. In addition, if similar projects are constructed at the same time in the immediate vicinity of the Proposed Project, the construction noise for these projects could be cumulatively additive with construction noise from the Proposed Project. The project thus could contribute incrementally to adverse cumulative impacts to noise on a temporary basis during construction. Implementation of Mitigation Measures NOISE-1 and NOISE-2 would reduce the project's contribution, but it would still be considerable if local noise standards are violated. Once the line is built, corona generated noise from the transmission line also could contribute incrementally, though in a relatively minor way, to cumulative noise impacts in areas near the line. The project's contribution to cumulative noise levels during operation would not be cumulatively considerable.

4.17.10 Paleontological Resources

Although the effects of the Proposed Project could combine with those of the cumulative projects listed in Table 4.17-1 to constitute significant cumulative impacts to paleontological resources under Impact PALEO-1, the incremental contribution of the Proposed Project would generally be limited to small amounts of new disturbances near existing utility corridors. Potential impacts to paleontological resources

would be sufficiently reduced through the implementation of the mitigation measures described in this document such that any contribution would be minor and would not be cumulatively considerable. No additional mitigation for cumulative impacts is necessary.

4.17.11 Public Health and Safety

Most of the cumulative projects identified in Table 4.17-1 would result use and disposal of hazardous materials. However, the incremental quantities of materials used as a result of the Proposed Project would be very small in comparison with other cumulative projects, and the applicable regulation of hazardous material handling would govern appropriate use of such materials for all projects.

Construction and operation of the Proposed Project, along with the cumulative projects listed in Table 4.17-1, could cause significant cumulative impacts to public health and safety, including interference with emergency response capabilities or resources (Impact H&S-1) or creation of hazards to workers or others in the area (Impact H&S-2). The incremental contribution of the Proposed Project, however, would be generally limited to temporary construction activities completed by workers trained in safety and hazardous materials handling and cleanup. These activities are unlikely to interfere with emergency response capabilities or resources, or create hazards to workers or others in the area; impacts to public and worker safety and health would be sufficiently reduced through the implementation of the mitigation measures described in this document such that any contribution would be minor and would not be cumulatively considerable. No additional mitigation for cumulative impacts is necessary.

4.17.12 Recreation

Past, present, and future development in the study area may cause similar direct or indirect impacts that conflict with established, designated, or planned recreation areas and activities. In particular, there are several projects listed in Table 4.17-1 within the SLRSRA that contribute to regional cumulative effects. Construction and maintenance activities associated with the Proposed Project could temporarily impact the setting within recreation areas and conflict with established areas or activities by causing indirect impacts to air quality, noise, and visual resources. Mitigation measures in this document would reduce the severity of these impacts to minimize the potential for conflict to recreational resources. Construction and maintenance activities would also conflict with planned facility management identified in the SLRSRA RMP/GP. Construction of the new Los Banos West Substation would result a substantial loss of recreation resources identified by the SLRSRA RMP/GP. The feasibility of mitigation is uncertain as it would be implemented by agencies other than Western and the Authority. As such, the project's contribution to conflicts with established or planned recreation areas would be cumulatively considerable (Impact REC-1).

Past, present, and future development in the study area may cause similar direct or indirect impacts that result in changes that alter the physical landscape of the recreation areas listed above. Temporary alterations caused by Proposed Project construction and maintenance activities would be restored and therefore, would not contribute to cumulative impacts. However, the presence of permanent transmission lines within the viewshed of the recreation areas would contribute to cumulative impacts. In addition, the permanent installation of facilities associated with the new Los Banos West Substation would substantially alter the physical setting of the Jasper Sears OHV Use Area. As described above, the feasibility of mitigation is uncertain; therefore, the project's contribution to physical alteration of established and planned recreation areas would be cumulatively considerable (Impact REC-2).

Past, present, and future development in the study area may cause similar direct or indirect impacts to accessibility of recreation areas. Accessibility impacts caused by Proposed Project construction and maintenance activities would be temporary and minimized through proper signage and coordination

with the public and would not contribute to cumulatively considerable impacts. However, the installation of permanent facilities associated with the construction of the new Los Banos West Substation may result in decreased accessibility to the Jasper Sears OHV Use Area. As described above, the feasibility of mitigation is uncertain; therefore, the project's contribution to decreased accessibility of established and planned recreation areas would be cumulatively considerable (Impact REC-3).

Future development in the study area may cause similar direct or indirect impacts that would contribute to a demand for recreational resources. However, due to the temporary nature of this impact and the abundance of recreational opportunities in the study area, the contribution would be negligible. Under CEQA, this contribution would not be cumulatively considerable (Impact REC-4).

4.17.13 Socioeconomics

Past, present, and future development in the study area may cause similar direct or indirect impacts that result in the permanent or irreversible loss of work for a major sector of a community. A large workforce is available within the four county region that encompasses the Proposed Project. Impacts associated with a temporary increase in construction jobs would not contribute to cumulatively considerable impacts as the total number of local workers is not anticipated to be substantial compared the total workforce.

Cumulative projects may cause similar direct or indirect impacts resulting in an increase in population that would create shortages of housing. Existing availability of housing in the region would accommodate the temporary increase in population associated with the Proposed Project. Therefore, the Proposed Project's contribution to housing shortages or a need for new infrastructure systems, including power or gas utilities, communications systems, water and sewer services, or solid waste disposal systems would be minor. Beneficial impacts associated with a temporary increase in construction jobs would not contribute to cumulatively considerable impacts as the total number of workers is not substantial compared to the total population.

Although other projects in the cumulative analysis study area could result in adverse effects to socioeconomics, the Proposed Project was not found to result in any socioeconomic adverse effects and therefore would not combine with the adverse effects of other projects to result in a cumulative considerable effects to socioeconomics.

4.17.14 Traffic and Transportation

While the Proposed Project could combine with the cumulative projects listed in Table 4.17-1 to cause significant cumulative impacts to traffic and transportation under Impact TRANS-1 through TRANS-7, the incremental contribution of the Proposed Project to local traffic conditions would be limited at peak construction times to no more than approximately 100 temporary or contract workers who would commute to and from various project locations during construction, and the average workforce would generally be less than half that amount. Road closures are not expected during construction of the Project or alternatives, and therefore the project would not cause delays on local roadways (Impact TRANS-2) or block emergency vehicle travel (Impact TRANS-3); and even in combination with the cumulative projects listed in Table 4.17-1, associated traffic would not cause exceedance of established level of service guidelines (Impact TRANS-1). Construction activities will not create hazards to drivers (Impact TRANS-4), or disrupt use of railways or bikeways (Impact TRANS-5). Construction and operation of the Project or alternatives also will not cause changes in flight paths (Impact TRANS-6) or conflict with a current or future airport plan. The effects of project traffic and construction would therefore be sufficiently reduced through the implementation of the mitigation measures described in this document such that any

contribution would be minor and would not be cumulatively considerable. No additional mitigation for cumulative impacts is necessary.

4.17.15 Visual Resources

Cumulative impacts to visual resources would occur where new electric transmission facilities occupy the same field of view as other landscapes developed by cumulative projects. Cumulative projects would occur in the vicinity of the activities and components associated with construction and operation of the Proposed Project, such as near the solar projects planned in the San Luis area, and the effects upon visual resources brought about by cumulative projects would be significant in this area.

To the extent that construction under the Proposed Project would affect views near one or more of the cumulative projects listed in Table 4.17-1, the visual character would temporarily change due to the visible presence of construction equipment, vehicles, materials, and personnel from the cumulative projects. However, these visual impacts of Proposed Project construction would be temporary and would not be cumulatively considerable.

Much of the Proposed Project and alternative routes are in remote areas with limited access, and therefore construction activities and the permanent structures associated with the Project in these areas would not disrupt visually important landscapes (Impact VIS-1), or be visible from highly sensitive viewer locations (Impact VIS-2). The Project Study Area is not in a unique scenic viewshed, and Project structures would not dominate established scenic views (Impact VIS-3), with one important exception, at the San Joaquin Valley National Cemetery.

Of the cumulative projects listed in Table 4.17-1, only the Quinto Solar Project has potential to create cumulatively considerable impacts to visual resources in combination with the Proposed Project or alternatives, as it would be located near one of the few important designated scenic views that are affected by the Project or alternatives. This solar project is reportedly under construction and is located on a 1,012-acre site bifurcated by McCabe Road and adjacent to the east side of the Butts Road alternative corridor. It reportedly will use landscaping to screen views of the solar panels from the cemetery, but when completed it would be visible from the scenic overlook above the cemetery, as would be the structures of the Proposed Project or the Butts Road alternative route. Though the structures of the Proposed Project when considered as a stand-alone project would not create a significant impact to visual resources from this viewpoint, depending upon the ultimate location and design of the solar project, the combination of the solar facility and the Proposed Project could present a cumulatively considerable and unavoidable impact to visual resources from this scenic viewpoint. Also, construction of the West of Cemetery alternative would cause significant and unavoidable impacts under VIS-1, VIS-2 and VIS-3 at this viewpoint, which would also be cumulatively considerable under CEQA.

Other than at the National Cemetery, there are no established viewpoints or important scenic views that would be affected by a combination of the Proposed Project or alternatives with the cumulative projects listed in Table 4.17-1. As a result, impacts on visual resources from the proposed transmission lines and substations would not be cumulatively considerable other than at San Joaquin Valley National Cemetery.

4.17.16 Water Resources and Floodplains

Past, present, and reasonably foreseeable future agricultural, urban development, infrastructure, and energy development projects may result in similar direct and indirect impacts to water resources and floodplains, including soil disturbance, increased erosion and sedimentation, and accidental discharge of hazardous materials, direct and indirect impacts to groundwater quality and levels, direct and indirect

impacts to the existing drainage pattern, and direct and indirect impacts to the water conveyance capacity of the local floodplains. Individually minor, but collectively significant actions, may have a cumulatively considerable impact on water resources and floodplains. However, compliance with applicable water quality regulations would ensure that the cumulative impact of past, present, and reasonably foreseeable future projects (including the Proposed Project) would remain minor. Under CEQA, the cumulative impact of the Proposed Project in combination with other past, present, and reasonably foreseeable projects in the area would be less than cumulatively considerable. No additional mitigation for cumulative impacts is necessary.

4.18 Unavoidable Adverse Impacts

NEPA regulations (40 CFR 1502.16) require that an EIS identify the adverse environmental impacts that cannot be avoided if the Proposed Project and mitigation measures are implemented. The Proposed Project would result in significant and unavoidable impacts (and contribute to cumulatively considerable impacts) to the following resource areas:

- **Noise.** Construction would result in more than a 5 dBA Leq increase at sensitive receptors near the project, which in turn would exceed local noise standards near residences (Impacts NOISE-1 and NOISE-3). Refer to Section 4.9.3 for complete descriptions of these impacts.
- **Recreation.** Construction of the proposed new Los Banos West Substation would result in conflicts with, physical alterations of, and decreased accessibility to the Jasper Sears OHV Use Area (Impacts REC-1, REC-2, REC-3). Refer to Section 4.12.3 for complete descriptions of these impacts.
- **Land Use.** Construction of the proposed new Los Banos West Substation would result in conflicts with the designated recreational use under the SLRSRA RMP/GP for the Jasper Sears OHV Use Area (Impacts LU-1 and LU-4). Refer to Section 4.8.3 for complete descriptions of these impacts.

4.19 Short-term Uses Versus Long-Term Productivity

Pursuant to NEPA regulations (40 CFR 1502.16), this section identifies the relationship between short-term uses of the environment attributable to the Proposed Project and the maintenance and enhancement of its long-term productivity.

The construction phase of the proposed SLTP would result in a total of 471 acres of temporary (short-term) disturbance (refer to Appendix E). After construction, Western would restore any temporarily disturbed areas. Permanent impacts are considered those that would be present over the 50- to 60-year life of the SLTP transmission line. Permanent impacts include 41.5 acres for transmission structures and 417.4 acres for access roads (new and improvements to existing). After Project decommissioning, all Project facilities would be removed and the permanent disturbance areas would be restored, thereby re-establishing the long-term productivity of these areas.

Short-term adverse impacts to biological resources, visual resources, land use, agriculture, cultural resources, noise, transportation and traffic, public health and safety, air quality, water resources, geology, mineral resources and soils, and socioeconomics would result from construction activities as described in Sections 4.2 through 4.16.

Adverse effects to air quality would be short-term and localized. During construction, emissions would exceed the NO_x, VOC, and PM₁₀ regulatory thresholds. However, construction activities may be phased to reduce emission levels, as recommended in mitigation.

Adverse effects to biological resources, including special-status species and sensitive habitats, would primarily be long-term and caused by habitat removal or alteration. Temporary habitat disturbance would be restored to pre-Project conditions. Restoration and recovery would vary by habitat type and special-status plant species.

Any adverse effects to cultural or paleontological resources during construction would last beyond the life of the Project, as these resources are non-renewable. Implementation of Project EPMs would avoid impacts to known resources.

Effects to agriculture would be long-term at the locations of transmission support structures and access roads. Agricultural practices could continue within the right-of-way. Any reduction in productivity within the Proposed Project area would be negligible over the life of the Project.

Long-term additive effects to visual resources would result from the presence of new transmission lines.

4.20 Irreversible/Irretrievable Commitment of Resources

Pursuant to CEQA Guidelines Section 15126.2(C), this section addresses significant irreversible environmental changes and irretrievable commitments of resources that would be caused by a proposed project. These changes include uses of nonrenewable resources during construction and operation, long-term or permanent access to previously inaccessible areas, and irreversible damages that may result from project-related accidents.

Construction vehicles, equipment, and helicopters would consume fuel. Construction would also require the manufacture of new materials, some of which would not be recyclable upon Project decommissioning. The energy required for manufacturing construction materials would result in an irretrievable commitment of natural resources. The equipment, vehicles, and materials required for construction of the Proposed Project are presented in Chapter 2.

Implementation of the Proposed Project would result in permanent loss of a maximum of 558.9 acres of vegetation. If any of these areas support special-status species or are considered sensitive habitat, impacts would be offset with compensatory habitat, as required by biological resources mitigation measures.

Existing access roads would be used wherever feasible. Up to 35 miles of new access roads would be constructed, primarily adjacent to existing transmission corridors with access roads. Access roads no longer needed after construction would be removed and restored to preconstruction condition to the extent possible. New public access to previously accessible areas would be negligible.

Hazardous materials used or encountered during construction and operation of the Proposed Project would be used, stored, and handled in accordance with Project EPMs and applicable federal, state regulations to avoid any Project-related accidents.

Some of the electricity transported by the proposed transmission lines would be generated by natural gas (a non-renewable resource).

4.21 Growth Inducement

NEPA regulations (40 CFR 1508.8(b)) require that an EIS discuss the growth-inducing impacts of a project. Additionally, CEQA Guidelines (15126.2(d)) require that an EIR discuss the ways in which a proposed project may foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. The discussion must address how a proposed project may remove obstacles to growth or encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively. Typically, the growth-inducing potential of a project would be considered significant if it fosters growth or a population concentration above what is assumed in local or regional land use plans, or in projections made by regional planning authorities. Significant growth impacts could also occur if a project provides infrastructure or service capacity to accommodate growth levels beyond those permitted by local or regional plans and policies.

The Proposed Project would provide electricity to Reclamation so that it can continue to efficiently pump, store, release, convey and deliver federal water resources to its contractors for municipal, industrial, and irrigation purposes at reasonable cost. The Proposed Project could cause indirect impacts by removing a potential obstacle to growth through the additional increased capacity of electric power that it would make available. However, the SLTP would not affect the allocation or delivery of water and is not intended to supply power related to growth for any particular development, either directly or indirectly. In addition, local city and county jurisdictions will often approve developments regardless of the presence or absence of electrical infrastructure and the Proposed Project would not modify land use or zoning designations to permit new residential or commercial development. Therefore, the Proposed Project would not foster growth, remove direct growth constraints, or add a direct stimulus to growth.

It is expected that the labor force for construction, operation, and decommissioning of the Proposed Project would be Western employees, local contractors, or commuting contractors; the required labor force would not be relocating. Therefore, construction of additional housing to support the Proposed Project would not occur.

Under the No Action Alternative, the Proposed Project would not be constructed. Growth-inducing impacts would not occur.

4.22 Energy Conservation

In order to assure that energy implications are considered in public agency decisions, CEQA requires that an EIR include a discussion of the potential energy impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful and unnecessary consumption of energy (see Public Resources Code section 21100(b)(3)). According to Appendix F of the State CEQA Guidelines, the goal of conserving energy implies the wise and efficient use of energy including: (1) decreasing overall per capita energy consumption; (2) decreasing reliance on natural gas and oil; and (3) increasing reliance on renewable energy sources. Some aspects of the energy use analysis are limited by the CEQA Guidelines (Section 15145), which recognizes that the lead agency may find that certain impacts may be too speculative for evaluation.

The Proposed Project would provide electricity for Reclamation so that it can continue to efficiently pump, store, release, convey and deliver federal water resources to its contractors for municipal, industrial, and irrigation purposes at reasonable cost. The SLTP is not intended to supply power related to growth for any particular development and would not contribute directly to a significant change in overall per capita energy consumption. The No Action/No Project Alternative would increase electricity rates for Reclamation and its customers who would be served from the Proposed Project.

Implementation of the Proposed Project would result in the consumption of energy in the form of fuel needed for vehicles and equipment used during construction. Additional energy would be required for the manufacture of new materials for the Project, some of which would not be recyclable at the end of the Proposed Project's lifetime. The anticipated equipment, vehicles, and materials required for construction of the Proposed Project are detailed in Section 2.1.3 (Construction of the Proposed Project). Addressing some aspects of air quality impacts and traffic congestion also reduces energy consumption. Western would follow EPMs for Air Quality and requirements under Mitigation Measure AQ-1, as described in Section 4.3.2, that would reduce engine idling and require construction and maintenance vehicles and equipment to maintain appropriate emissions control equipment. In addition, Western would be required to submit a Traffic Control Plan (Mitigation Measure TRAFFIC-1), which will include methods of reducing construction-related traffic. No significant increases in inefficiencies or unnecessary energy consumption are expected to occur as a direct or indirect consequence of the Proposed Project.

Energy conservation measures are included in the EIS/EIR as components of the Project. Western would implement these aforementioned measures to reduce wasteful, inefficient, and unnecessary consumption of energy. No increases in inefficiencies or unnecessary energy consumption are expected to occur as a direct or indirect consequence of the project. Therefore, no mitigation measures above those previously identified in this EIS/EIR would be necessary.

Under the No Action Alternative, electricity rates are anticipated to be higher for Reclamation and its customers. Therefore, energy consumption may be lower under the No Action Alternative in comparison to the Proposed Project.

Chapter 5 Consultation and Coordination

Table 5-1 provides a list of federal, state, and local agencies and organizations contacted during preparation of the EIS/EIR.

Table 5-1. EIS/EIR Information Contacts

Agency/Organization	Name and Title
Federal	
U.S. Fish and Wildlife Service, San Joaquin Valley Division	Thomas Leeman, Division Chief Hunter Kunkel, Biologist
State	
California Department of Fish and Wildlife, Regions 3 and 4	Annee Ferranti, Senior Environmental Scientist Jim Vang, Environmental Scientist Marcia Grefsrud, Environmental Scientist Craig Bailey, Environmental Scientist
California Department of Parks and Recreation, Central Valley District	Liz Stellar, District Services Manager Jack Harper Jess Cooper
California Geological Survey, Mineral Resources and Mineral Hazards Mapping Program	John Clinkenbeard, Mineral Hazards Supervisor and Senior Geologist
California Highway Patrol	Chuck Enterg, Officer
California Farm Bureau	Karen Mills, Public Utilities Director
Local and Other	
Merced County Community and Economic Development Department	James Holland, Senior Planner
Stanislaus County Planning and Community Development Department	Jami Aggers, Director Environmental Resources and Parks and Recreation
City of Tracy	Bill Dean, Assistant Development Services Director
San Joaquin Delta College, South Campus at Mountain House	Public Information Office

NHPA Section 106 Consultation

State Historic Preservation Officer

On 3 November 2014, Western sent a letter (Appendix H) to the California State Historic Preservation Officer (SHPO), Carol Roland-Nawi, to initiate consultation pursuant to Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations, 36 CFR Part 800 Protection of Historic Properties, regarding the Proposed SLTP Undertaking. Pursuant to 36 CFR 800.2(a)(2), Western is designated Lead Federal agency for the purposes of Section 106 consultation. Western is conducting ongoing consultation with the California SHPO and Office of Historic Preservation. This is in regard to the area of potential effects from the Proposed SLTP Undertaking, the nature and organization of future survey and evaluation, the eligibility of resources present within the corridors, and the resolution of any effects to eligible resources. The primary contacts within the Office of Historic Preservation are Jessica Tudor, Associate State Archaeologist in the Archaeology and Environmental Compliance Unit, and Kathleen Forrest, State Historian II in the Architecture and Environmental Compliance Unit.

Native American Consultation

By letter of January 22, 2014, Western contacted the Native American Heritage Commission (NAHC) and requested a current contact list of all Native American groups who might have an interest in the Project area. Western also requested that NAHC conduct a search of their Sacred Lands file to determine the presence of any sacred sites or traditional cultural properties and landscapes within the APE. By letter of January 29, 2014, NAHC responded with a list of contacts and a negative result of the Sacred Lands search. By letter of March 3, 2014, Western contacted all Native American groups on the list provided by NAHC. Western received one response from the California Valley Miwok Tribe who stated they have no issues, but requested to be notified in the event of any inadvertent discoveries associated with Miwok artifacts and/or human remains. Another individual contacted Western with suggestions for mitigation measures if the SLTP would impact sites or areas important to Native Americans, specifically, the Miwok Tribe. Western will continue to keep all of the Tribal contacts informed of any changes to the Proposed SLTP Undertaking and will continue to be responsive to any future requests for consultation. The Proposed SLTP Undertaking does not cross tribal reservations or Native American Trust territories.

Chapter 6

Mitigation Monitoring and Reporting Program

6.1 Introduction

Western and the Authority included a series of EPMs as part of the Proposed Project to minimize potential environmental impacts during construction, operation, and maintenance. In addition, mitigation measures were formulated that would avoid, minimize or compensate for impacts identified in this EIS/EIR. This Mitigation Monitoring and Reporting Program (MMRP) is intended to be used by Western to ensure that each mitigation measure, adopted as a condition for project approval, is implemented. The MMRP meets the requirements of NEPA and is consistent with the CEQA, as amended (Guidelines Section 15074(d)) for the implementation of mitigation.

6.2 Mitigation Implementation and Monitoring

Western will be responsible for monitoring the implementation of mitigation measures (listed in Table 6-1). Western will designate specific personnel to implement and document all aspects of the MMRP. Western will ensure that the designated personnel have authority to enforce mitigation requirements and will be capable of terminating project construction activities found to be inconsistent with mitigation objectives.

Western will demonstrate compliance with applicable permit conditions to appropriate regulatory agencies. It will also be responsible for ensuring that construction personnel understand their responsibilities for adhering to the performance requirements of the mitigation plan and other contractual requirements related to the implementation of mitigation as part of Proposed Project construction.

Table 6-1. Mitigation Monitoring and Reporting Program

Mitigation Measure	<p>MM AQ-1: Reduce or offset construction equipment emissions. Western will specify that construction contractors should:</p> <ul style="list-style-type: none"> ▪ Use alternative fueled or catalyst-equipped diesel construction equipment or construction equipment powered by engines meeting, at a minimum, Tier 3 or higher emission standards, as set forth in §2423 of Title 13 of the California Code of Regulations, and Part 89 of Title 40 Code of Federal Regulations. ▪ Minimize idling time (e.g., 5 minute maximum). ▪ Limit the hours of operation of heavy duty equipment and/or the amount of equipment in simultaneous use. ▪ Replace fossil-fueled equipment with electrically driven equivalents (provided they are not run via a portable generator set). ▪ Curtail construction during periods of high ambient pollutant concentrations; this may include ceasing of construction activity during the peak-hour of vehicular traffic on adjacent roadways. ▪ Implement construction activity management (e.g., rescheduling activities to reduce short-term impacts). <p>Upon completion of detailed engineering plans for the SLTP and prior to commencing construction, Western will conduct a detailed air quality analysis of the construction phase of the project to determine the feasibility and necessity of financing additional off-site emission reduction programs to offset emissions to levels that are less than the EPA General Conformity thresholds.</p>
Location	Entire Project area
Monitoring/Reporting Action	Report results of air quality analysis
Effectiveness Criteria	Construction equipment emissions are reduced or offset
Responsible Agency	Western
Timing	Prior to construction, Construction
Mitigation Measure	<p>MM BIO-1: Conduct surveys for special-status plants and sensitive habitats. Prior to construction, an agency-approved botanist will survey Project areas during appropriate blooming periods for listed and special-status plant species and sensitive habitats. Special-status vegetation communities and species will be reported to the USFWS and/or CDFW.</p>
Location	Entire Project area
Monitoring/Reporting Action	Report special-status vegetation communities and species to the USFWS and/or CDFW
Effectiveness Criteria	Special-status plants and sensitive vegetation communities will be mapped
Responsible Agency	Western
Timing	Prior to construction
Mitigation Measure	<p>MM BIO-2: Avoidance and minimization measures for special-status plants and vegetation communities. The following measures will be implemented during construction and O&M activities for special-status plants and vegetation communities. Special-status plants include federal and state listed plant species (large-flowered fiddleneck, Hoover's spurge, Delta button-celery, Contra Costa goldfields, Mason's lilaeopsis, Hartweg's golden sunburst, and Greene's tuctoria), and all CRPR special-status plants.</p> <p>During construction activities:</p>

Table 6-1. Mitigation Monitoring and Reporting Program

- From March 1 to August 31, vehicle access will be permitted only on well-established roads until an agency-approved botanist has surveyed the site.
- Ground-disturbing activities will require a bloom season survey by an agency-approved biologist to flag any existing plant populations. Ground disturbance will be prohibited within the flagged boundary unless further consultation with USFWS or coordination with CDFW (as appropriate) is completed. Flagging or other field markers such as temporary fence posts, or other markers that will last for the construction season, will be placed in the prohibited area to ensure that no disturbance occurs at that location. Populations of special-status plants will also be mapped and located in the field using a GPS so that they are clearly identified at all times of the year and construction workers can easily identify areas to be avoided. The area where special-status plants are being preserved will be avoided by workers doing construction activities at all times of the year. After construction is completed the flagging and markers can be removed.
- During Project construction, a biological monitor will be present when work occurs within 100 feet of a flagged listed plant population.
- Standard erosion- and sediment-control measures will be installed for all ground-disturbing activities to prevent impacts to special-status plants and vegetation communities.
- Where impacts to special-status plants cannot be avoided, and mitigation cannot be achieved through the purchase of credits at a mitigation or conservation bank, the top 4 inches of topsoil will be removed and salvaged and applied to an appropriate on-site or off-site restoration area. When this topsoil is replaced, compaction will be minimized. Soil will not be stockpiled for more than one year to maintain seed viability.
- Western will comply with conditions of any affected existing conservation easement, and will avoid and minimize impacts within conservation easements to the extent feasible.

During O&M activities:

- From March 1 to August 31, vehicle access will be permitted only on well-established roads until an agency-approved biologist has surveyed the site.
- If vegetation management activities are proposed between March 1 and August 31, an agency-approved biologist will mark special-status plant populations, including a 50-foot (15-meter) buffer zone, prior to construction and O&M activities. Within 100 feet (30.5 meters) of the marked area, the following work area limits will be provided: (1) only manual clearing of vegetation will be allowed within 50 feet of the edge of the flagged area, (2) mechanical treatment of all kinds (including mowers, tractors, chippers, dozers) will be prohibited, and (3) herbicide use will be prohibited at all times with the exception of direct application to target vegetation.
- Workers will refer to maps that show the location of mapped populations of special-status plants so that these areas can be avoided.
- Standard erosion- and sediment-control measures will be installed for all ground-disturbing activities to prevent impacts to plants.
- Where impacts to special-status plants cannot be avoided, and mitigation cannot be achieved through the purchase of credits at a mitigation or conservation bank, the top 4 inches of topsoil will be removed and salvaged and applied to an appropriate on-site or off-site restoration area. When this topsoil is replaced, compaction will be minimized. Soil will not be stockpiled for more than one year to maintain seed viability.
- Western will comply with conditions of any affected existing conservation easement, and will avoid impacts within conservation easements to the extent feasible.

Location	Special-status plant populations and sensitive vegetation communities
Monitoring/Reporting Action	Flag and map sensitive resources for avoidance, conduct biological monitoring
Effectiveness Criteria	Effects to special-status plants and sensitive vegetation are avoided or minimized
Responsible Agency	Western

Table 6-1. Mitigation Monitoring and Reporting Program

Timing	Construction and O&M
Mitigation Measure	<p>MM BIO-3: Provide compensatory mitigation for impacts to special-status plants. Western will purchase credits in an appropriate mitigation bank or habitat conservation bank for the plants species to be impacted as appropriate. If a mitigation bank is not available Western will contribute in-lieu fees to a mitigation bank or habitat conservation bank that can provide appropriate mitigation for the special-status plant species affected. Western will work with the appropriate resource agency (USFWS and/or CDFW) to ensure adequate compensation. Mitigation ratios will be sufficient to achieve the performance criterion of no net loss of the affected plant species.</p> <p>If mitigation cannot be achieved by purchase of credits in a mitigation or conservation or by in-lieu fees, then Western will prepare a mitigation plan that describes the compensatory mitigation measures that will be implemented for special-status plants. The mitigation plan will be submitted to the USFWS for approval for federal listed plants and to CDFW for state-listed and CRPR plants. The mitigation plan will include the mitigation measures, which are adopted from the CNPS <i>Policy on Mitigation Guidelines Regarding Impacts to Rare, Threatened and Endangered Plants</i> (CNPS, 1998); or equally effective alternative measures.</p>
Location	Special-status plant species habitats
Monitoring/Reporting Action	Submit plan that describes avoidance or compensatory mitigation measures; report permanent and temporary habitat loss and compensation including habitat location and status
Effectiveness Criteria	Special-status plants are avoided or compensated for
Responsible Agency	Western
Timing	Prior to construction
Mitigation Measure	<p>MM BIO-4: Provide compensatory mitigation for impacts to federally listed branchiopod habitat. If effects to branchiopod habitats cannot be avoided, Western will compensate for effects through one of the following: (a) affected pools will be restored on site after construction is complete, (b) credits will be acquired from an agency-approved conservation bank, (c) funds will be deposited into an approved in-lieu fee program, or (d) a conservation easement will be purchased. Compensation amounts will be approved by USFWS.</p> <p>For onsite creation or restoration, Western will develop and implement a mitigation, monitoring, and reporting plan with input from regulatory agencies that outlines performance standards and success criteria for ensuring long-term success of mitigation. If it is necessary for cysts to be salvaged to restore affected pools and with concurrence from the USFWS, an agency-approved biologist will salvage soils from local sites that are known to support vernal pool branchiopods at least 2 weeks before the onset of construction, or during the preceding dry season if pools are anticipated to hold water when construction begins. The salvaged soil samples will be stored and used to inoculate restored pools.</p>
Location	Branchiopod habitats
Monitoring/Reporting Action	Track the development of habitat conditions that are conducive to the establishment of vernal pool branchiopods; submit plan that outlines performance standards and success criteria for ensuring long-term success of mitigation
Effectiveness Criteria	Size, vegetation species present, date of initial ponding, ponding duration, and wildlife usage
Responsible Agency	Western
Timing	Prior to construction
Mitigation Measure	<p>MM BIO-5: Avoidance and minimization measures for valley elderberry longhorn beetle. The following measures will be implemented during construction and O&M activities to protect valley elderberry longhorn beetle.</p>

Table 6-1. Mitigation Monitoring and Reporting Program

<p>During construction activities:</p> <ul style="list-style-type: none"> ▪ If the Project may affect valley elderberry longhorn beetle, take authorization/permits will be obtained from the USFWS. Upon completion of the authorization/permit process, Western will implement the terms and conditions of the authorizations for this beetle, which could include but may not be limited to the following: <ul style="list-style-type: none"> – A 100-foot (30.5-meter) no-disturbance buffer fence will be installed and maintained around the perimeter of elderberry shrubs. No grading or any other ground-disturbing activities will be conducted within the fenced area without prior verification that the requirements of the USFWS have been satisfied including the issuance of any necessary permits or authorizations. – Contractors will be briefed on the status of the beetle, the need to protect its elderberry host plant, the need to stay out of this 100-foot buffer, and the possible penalties for not complying with these requirements. – Signs will be erected every 50 feet (15 meters) along the edge of avoidance areas with the following statements: “This area is habitat of the valley elderberry longhorn beetle, a threatened species, and must not be disturbed. This species is protected by the Endangered Species Act of 1973, as amended. Violators are subject to prosecution, fines, and imprisonment.” The signs will be clearly readable from a distance of 20 feet (6 meters), and will be maintained for the duration of construction. – Biological monitoring will be provided by an agency-approved biologist during construction in all areas within 100 feet (30.5 meters) of elderberry plants. <p>During O&M activities:</p> <ul style="list-style-type: none"> ▪ Prior to initiating vegetation clearance with elderberry plants present, qualified personnel will clearly flag or fence each elderberry plant with a stem measuring 1 inch (2.54 centimeters) or greater in diameter at ground level. If an elderberry plant meeting this criterion is present: <ul style="list-style-type: none"> – A minimum buffer zone of 20 feet (6 meters) outside of the dripline of each elderberry plant will be provided during all routine O&M activities within which all O&M activities except manual clearing will be prohibited. – No insecticides, herbicides, fertilizers, or other chemicals will be used within 100 feet (30.5 meters) of an elderberry plant, except direct application to target vegetation. – Trimming, rather than removal of shrubs, will be used where feasible. Directional felling of trees and manual-cutting trees prior to removal will be used to minimize impacts to elderberries. – Replacement of existing conductor or installation of additional lines will be performed by pulling the line from tower to tower without touching the vegetation in areas where elderberry plants are present. 	
Location	Elderberry shrubs
Monitoring/Reporting Action	Flag or fence for avoidance, conduct biological monitoring
Effectiveness Criteria	Elderberry shrubs are avoided or compensated for
Responsible Agency	Western
Timing	Construction and O&M
Mitigation Measure	MM BIO-6: Provide compensatory mitigation for impacts to elderberry plants. If complete avoidance (100 feet) of elderberry plants is not feasible during construction, a mitigation plan will be developed in accordance with the most current USFWS mitigation guidelines (currently USFWS 1999) that will include provision for compensatory mitigation. The mitigation plan will include, but may not be limited to, relocating elderberry shrubs, planting elderberry shrubs, establishing success criteria, monitoring relocated and planted elderberry shrubs to ensure success, and an adaptive management plan in the

Table 6-1. Mitigation Monitoring and Reporting Program

	event that mitigation is not successful.
Location	Elderberry shrubs
Monitoring/Reporting Action	Submit plan that describes avoidance or compensatory mitigation measures; report number of affected shrubs and associated compensation including habitat location and status
Effectiveness Criteria	Elderberry shrubs are avoided or compensated for
Responsible Agency	Western
Timing	Prior to construction
Mitigation Measure	<p>MM BIO-7: Avoidance and minimization measures for Alameda whipsnake. Western will minimize or avoid effects to Alameda whipsnake and its habitats by implementing the following measures.</p> <ul style="list-style-type: none"> ▪ If suitable Alameda whipsnake habitat will be impacted by the proposed project, Western will consult with the USFWS and coordinate with CDFW. Applicable take authorization/permits will be obtained, as necessary. Upon completion of the authorization/permit process, Western will implement the terms and conditions of the authorizations, which could include but may not be limited to the following: <ul style="list-style-type: none"> – If habitat for Alameda whipsnake will be impacted by project activities, Western will develop and implement a protection and monitoring plan for Alameda whipsnake that will be approved by USFWS and coordinated with CDFW. Measures in this plan will include, but may not be limited to, a procedure for conducting preconstruction surveys and/or trapping surveys before the onset of initial ground-disturbing activities in areas with high-quality habitat that cannot be avoided, surveying before construction and/or restoration begins each day that these activities will occur, and direct monitoring by an agency-approved biologist of the occupied or potentially occupied grassland/scrub/mosaic habitats in the Project area that will be directly affected by Project construction.
Location	Alameda whipsnake habitat
Monitoring/Reporting Action	Submit protection and monitoring plan
Effectiveness Criteria	Alameda whipsnakes and their habitat are avoided or minimized
Responsible Agency	Western
Timing	Prior to construction
Mitigation Measure	<p>MM BIO-8: Avoidance and minimization measures for blunt-nosed leopard lizard. To protect blunt-nosed leopard lizard, Western will implement the following for both construction and O&M activities.</p> <ul style="list-style-type: none"> ▪ An agency-approved (USFWS and CDFW) biologist will conduct blunt-nosed leopard lizard surveys for each ground disturbance site in blunt-nosed leopard lizard habitat per the <i>2004 Approved Survey Methodology for the Blunt-nosed Leopard Lizard</i> (CDFG, 2004) or currently approved methodology. ▪ If blunt-nosed leopard lizards are not detected during surveys, a flashing barrier or other short-term or longer-term fencing plan approved by CDFW will be installed when feasible and necessary around the work area to prevent blunt-nosed leopard lizards from entering the work area. Fencing options may be shorter term (temporary for just a few hours) or longer term (days or weeks) and may include but would not be limited to a 36 inches (0.9 meters) tall barrier, buried 6 inches (15 centimeters) deep, and reinforced with rebar or T-posts, and may include escape ramps of silt-fencing material, wood, or soil to allow any undetected blunt-nosed leopard lizard to exit the site. Fencing plans and types may be altered based on length of time the fence is to remain in place, terrain, and Project needs. Fencing will be removed upon Project completion.

Table 6-1. Mitigation Monitoring and Reporting Program

	<ul style="list-style-type: none"> ▪ If blunt-nosed leopard lizards are subsequently found within the fenced work area, a section of fence may be removed so that the lizard may leave the exclusion zone. The agency-approved biologist will monitor the location of the blunt-nosed leopard lizard to ensure that it has moved outside of the work area. The fencing will be immediately replaced to exclude the lizard from the construction area. When all observed blunt-nosed leopard lizards have exited the site, additional surveys will be implemented during appropriate conditions for detection for at least five survey days before construction begins to ensure that no more blunt-nosed leopard lizards inhabit the work-area exclusion zone. ▪ If blunt-nosed leopard lizards are detected during surveys, any active burrow within a 200-foot radius of activity sites will be flagged and marked with a burrow number prior to construction or O&M activities. Flagged, 50-foot (15-meter) exclusion zones will be established around any potentially active burrow. Construction activities, with the exception of essential vehicle operation on existing roads and foot travel, will be prohibited within this exclusion zone. A flashing barrier or appropriate fencing approved by CDFW will be established between burrow(s) and work sites. The barrier or fencing will be established at least 180 degrees around the burrow site and will flare out at the ends to direct lizards away from the activity sites. The barrier or fencing will not enclose an active burrow site. ▪ An agency-approved biological monitor will monitor all vehicular traffic within 200 feet (61 meters) of active burrows by escorting all vehicles through this zone on foot. The monitor will walk in front of the vehicle to ensure that no blunt-nosed leopard lizards are in the road or path of travel. All personnel vehicles or other vehicles not needed for construction activities will park at least 200 feet (61 meters) from the flagged burrow site and crews will walk into the work area. ▪ An agency-approved biological monitor will be on site for any activities within suitable blunt-nosed leopard lizard habitat. Prior to construction or O&M activities each day within suitable blunt-nosed leopard lizard habitat, the monitor will conduct a brief ground survey of the site during appropriate conditions for detection to verify that no blunt-nosed leopard lizards are visible within the site. The agency-approved biological monitor will have the authority to stop and/or redirect Project activities in coordination with the project manager and Western's natural resources staff to ensure the protection of blunt-nosed leopard lizards. The agency-approved biological monitor will complete daily reports/logs summarizing activities and environmental compliance. ▪ Vehicle speed limit of 15 mph (24 kph) will be enforced during construction and O&M activities on all nonpublic Project access roads within blunt-nosed leopard lizard habitat and outside of blunt-nosed leopard lizard flagged areas. Vehicle speeds within 200 feet (61 meters) of flagged blunt-nosed leopard lizard areas (known presence) will be contingent upon the walking speed of biological monitor.
Location	Blunt-nosed leopard lizard habitat
Monitoring/Reporting Action	Install exclusion fencing, flag burrows for avoidance, conduct biological monitoring
Effectiveness Criteria	Blunt-nosed leopard lizards and their habitat are avoided or compensated for
Responsible Agency	Western
Timing	Construction and O&M
Mitigation Measure	<p>MM BIO-9: Avoidance and minimization measures for special-status reptiles. To protect California legless lizard, coast horned lizard, and San Joaquin whipsnake, Western will implement the following measures during construction and ground-disturbing O&M activities.</p> <ul style="list-style-type: none"> ▪ A preconstruction survey for California legless lizard, coast horned lizard, and San Joaquin whipsnake will be conducted by an agency-approved biologist in all suitable habitats where tower construction, new access roads, or ground-disturbing O&M activities will affect suitable sandy grassland, scrub, sycamore, or sandy wash habitats. The survey will be conducted within 14 to 30 days of the onset of construction. If individuals of these species are not found, no further action will be required. ▪ If California legless lizard, coast horned lizard, or San Joaquin whipsnake are found, occupied habitat as well as other suitable habitats will be avoided to

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	the extent feasible. An agency-approved biologist will conduct daily surveys in suitable habitats during construction and O&M activities and will attempt to capture or otherwise move animals out of harm's way when necessary.
Location	Special-status reptile habitat
Monitoring/Reporting Action	Flag habitat for avoidance, biological monitoring
Effectiveness Criteria	Special-status reptiles are avoided or compensated
Responsible Agency	Western
Timing	Construction and O&M
Mitigation Measure	<p>MM BIO-10: Avoidance and minimization measures for giant garter snake. Western will implement the following measures to protect giant garter snake during construction and O&M activities in Los Banos Creek and adjacent uplands below the dam impounding Los Banos Creek Reservoir.</p> <p>During construction activities:</p> <ul style="list-style-type: none"> ▪ A preactivity survey will be conducted no more than 24 hours before construction activities begin, and an agency-approved biologist will be on site during all activities in potential giant garter snake aquatic and upland habitats. Preactivity surveys will be repeated whenever a lapse in construction activity of two weeks or longer occurs. The biologist will have the authority to stop construction if a giant garter snake is encountered; construction may resume when the snake has been seen to leave the area on its own or the agency-approved biologist confirms the snake will not be harmed. Only personnel with a USFWS 10(a)(1)(A) recovery permit will have the authority to capture and/or relocate giant garter snakes encountered in project area. All sightings and incidental take will be reported to the Western Natural Resources Department, who will report to the USFWS. <p>During Category A O&M activities (Appendix D):</p> <ul style="list-style-type: none"> ▪ Implement EPMs. <p>During Category B O&M activities (Appendix D):</p> <ul style="list-style-type: none"> ▪ With the exception of direct application, use of herbicides within 200 feet (61 meters) of potential giant garter snake habitat will be prohibited at all times. ▪ Giant garter snake aquatic and upland habitats will be flagged as environmentally sensitive areas by an agency-approved biologist within or adjacent to the disturbance footprint. Only manual vegetation removal will be allowed within the flagged area. ▪ An agency-approved monitor will be present for O&M activities within the flagged area. Ground-disturbing activities will be avoided within 200 feet (61 meters) from the banks of giant garter snake aquatic habitat. If this were not feasible, O&M activities will be conducted between May 1 and September 30, the giant garter snake active period, and all potentially affected aquatic habitats will be dewatered prior to any ground disturbance. Dewatered areas will remain dry with no puddled water remaining for at least 15 consecutive days prior to excavation or filling of that habitat. If a site could not be completely dewatered, prey items will be netted or otherwise salvaged if present. ▪ If it is not feasible to conduct O&M activities between May 1 and September 30, the Sacramento Fish and Wildlife Office will be contacted, and the following actions will be performed: <ul style="list-style-type: none"> – A preactivity survey will be conducted no more than 24 hours before construction activities begin, and an agency-approved biologist will be on site during all activities in potential giant garter snake aquatic and upland habitat. Preactivity surveys will be repeated whenever a lapse in construction activity of two weeks or longer occurs. The biologist will have the authority to stop construction if a giant garter snake is encountered; construction may resume when the snake has been seen to leave the area on its own or the agency-approved biologist confirms the snake will not be harmed. Only personnel with a USFWS 10(a)(1)(A) recovery permit will have the authority to capture and/or relocate giant garter snakes encountered in project area. All sightings and incidental take will be reported to the Western Natural Resources Department, who will report to the USFWS

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	<p>– Any temporary fill and debris that might provide habitat for giant garter snakes will be immediately removed and disturbed areas will be restored to pre-Project conditions after completion of O&M activities. Restoration work could include replanting species removed from banks or replanting emergent vegetation in the active channel. Filter fences and mesh will be of a material that will not entrap reptiles and amphibians. Erosion-control blankets will be used as a last resort because of their tendency to biodegrade slowly and trap reptiles and amphibians. No monofilament plastics will be used for erosion control near aquatic features.</p> <p>During Category C O&M activities (Appendix D):</p> <ul style="list-style-type: none"> ▪ Follow all measures listed for Category A and B activities above. Prior to site mobilization, Western will provide notification to appropriate agencies.
Location	Los Banos Creek and adjacent uplands below the dam impounding Los Banos Creek Reservoir
Monitoring/Reporting Action	Biological monitoring
Effectiveness Criteria	Giant garter snakes and their habitat are avoided
Responsible Agency	Western
Timing	Construction and O&M
Mitigation Measure	<p>MM BIO-11: Avoidance and minimization measures for western pond turtle. Western will implement the following measures to protect western pond turtle during construction and O&M activities.</p> <p>During construction activities:</p> <ul style="list-style-type: none"> ▪ A preconstruction survey for western pond turtles will be conducted by an agency-approved biologist in all construction areas identified as potential nesting or dispersal habitat located within 1000 feet (305 meters) of potential aquatic habitat. The survey will be conducted within 48 hours prior to initiation of construction activities. If a western pond turtle is found during preconstruction surveys in an area where it may be affected by construction, an agency-approved biologist will relocate it with permission from CDFW to a site that is a suitable distance from construction activities as necessary. If a nest is found within the construction area, construction will not take place within 100 feet (30.5 meters) of the nest until the turtles have hatched and have left the nest or can be safely relocated, as determined through coordination with CDFW. ▪ Because attempting to locate pond turtle nests will not necessarily result in detection, after completion of preconstruction surveys and any necessary relocation, exclusion fencing will be placed around all construction sites adjacent to suitable aquatic habitats during the nesting season to eliminate the possibility of nest establishment in uplands adjacent to aquatic areas, as necessary. ▪ If construction activities occur near aquatic areas where turtles have been identified during preconstruction or other surveys, a biological monitor will be present during construction. If a turtle is found, it will be relocated, if necessary, to a site a suitable distance from construction activities. ▪ If a pond turtle is encountered on the Project site, any construction activity that could result in harm of the turtle will immediately cease and will not resume until the agency-approved biologist has moved the turtle to a safe location. <p>During O&M activities:</p> <ul style="list-style-type: none"> ▪ For Category A activities (Appendix D): follow standard EPMs. ▪ For Category B and C activities (Appendix D): From April 15 to July 15, any ground-disturbing activity within 400 feet (122 meters) of a permanent pond, lake, creek, river, or slough that could affect the bed, bank, or water quality of any of these features will be prohibited OR an agency-approved biologist will inspect the Project area. If adult or juvenile pond turtles are present, an agency-approved biologist will monitor Project activities to ensure that no turtles are harmed. If the biologist determines that nests could be adversely affected, potential nesting areas will be avoided between June 1 and

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	October 31.
Location	Western pond turtle habitat
Monitoring/Reporting Action	Flag habitat for avoidance, install exclusion fencing during nesting season, biological monitoring
Effectiveness Criteria	Western pond turtles, nests, and habitat are avoided
Responsible Agency	Western
Timing	Construction and O&M
Mitigation Measure	<p>MM BIO-12: Provide compensatory mitigation for impacts to special-status reptiles. If habitat for listed or other special-status reptiles cannot be avoided, Western will provide compensatory mitigation as follows:</p> <ul style="list-style-type: none"> ▪ Alameda Whipsnake. Western will compensate for permanent and temporary loss of upland scrub habitats that could support Alameda whipsnake by (a) purchasing credits at a conservation bank approved by CDFW and USFWS, (b) purchasing a conservation easement, (c) donating funds to an approved in-lieu fee program, or (d) restoring habitats affected by the Project. For onsite creation or restoration, Western will develop and implement a mitigation, monitoring, and reporting plan with input from and approval by regulatory agencies that outlines performance standards and success criteria for ensuring long-term success of mitigation. ▪ Blunt-Nosed Leopard Lizard. Western will provide compensation for permanent and temporary impacts to blunt-nosed leopard lizard habitat by (a) purchasing credits at a conservation bank approved by CDFW and USFWS, (b) purchasing a conservation easement, (c) donating funds to an approved in-lieu fee program, or (d) restoring habitats affected by the Project. For onsite creation or restoration, Western will develop and implement a mitigation, monitoring, and reporting plan with input from and approval by regulatory agencies that outlines performance standards and success criteria for ensuring long-term success of mitigation. ▪ Other Special-Status Reptiles. If California legless lizard, coast horned lizard, or San Joaquin whipsnake are found during preconstruction surveys and avoidance of habitats is not feasible, Western will restore habitats temporarily affected. Surveys, fencing, and compensatory mitigation for blunt-nosed leopard lizard habitat and upland habitat for California red-legged frog and California tiger salamander will benefit these species as well.
Location	Habitat for Alameda whipsnake, blunt-nosed leopard lizard, and other special-status reptiles
Monitoring/Reporting Action	Submit plan that describes avoidance or compensatory mitigation measures; report permanent and temporary habitat loss and compensation including habitat location and status
Effectiveness Criteria	Habitat is avoided or compensated
Responsible Agency	Western
Timing	Prior to Construction

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Mitigation Measure	<p>MM BIO-13: Avoidance and minimization measures for California red-legged frog. Western will implement the following measures to protect California red-legged frog during construction and O&M activities.</p> <p>During construction activities:</p> <ul style="list-style-type: none"> ▪ California red-legged frog presence will be assumed in all aquatic habitats for which protocol surveys have not been conducted in the year prior to construction. Uplands within 1 mile (1.6 kilometers) will be assumed to be occupied around all aquatic habitats for which protocol surveys have not been conducted. ▪ If the Project may affect California red-legged frog, take authorization/permits will be obtained from the USFWS. Upon completion of the authorization/permit process, Western will implement the terms and conditions of the authorizations, which could include but may not be limited to the following. <ul style="list-style-type: none"> – Transmission towers and new access roads will be sited as far from aquatic habitats as is feasible. – To the extent feasible, construction activities will take place during the dry season (generally June 1 through September 30) within 1.24 miles (2 kilometers) of aquatic habitats. If construction extends into the wet season (generally October 1 through May 31), temporary exclusion fencing will be installed 100 feet (30.5 meters) out from work areas to prevent California red-legged frogs from entering construction areas as necessary. – Escape ramps will be constructed in all trenches or excavations to allow wildlife to escape. – Biological monitoring will be provided by a USFWS-approved biologist during construction in all areas within 1.24 miles (2 kilometers) of aquatic habitats. The biological monitor will identify, capture, and relocate sensitive amphibians present in work areas if necessary. – A 300-foot (91-meter) setback, incorporating both riparian vegetation and uplands, will be provided on all sides of aquatic habitats identified as occupied or assumed occupied by red-legged frogs as feasible. A setback may be reduced or expanded through consultation with the USFWS depending on whether it would (a) affect habitat or (b) result in adverse impacts to the species or the biological values of the habitat. Setbacks will maintain existing vegetation free of disturbance and new construction, equipment storage, vehicle parking, and other activities that might compact or disturb soils or vegetation or that could introduce contaminants into aquatic habitats. Setbacks will be clearly delineated during the construction. – Water quality will be maintained through implementation of appropriate erosion-control measures to reduce siltation and contaminated runoff from Project sites by maintaining vegetation within buffers and/or through the use of hay bales, filter fences, vegetative buffer strips, or other accepted equivalents. – Construction and other ground disturbances will be prohibited within setbacks. The use of insecticides, herbicides, rodenticides, and pesticides will occur in accordance with USEPA guidelines addressing the use of these materials in occupied California red-legged frog habitat. – Where aquatic sites cannot be avoided by 300 feet (91 meters) on all sides, a USFWS-approved biologist will survey the work site immediately prior to construction activities. If California red-legged frogs, tadpoles, or egg masses are found, the approved biologist will contact USFWS to determine whether moving any of these life-stages is appropriate. In making this determination USFWS will consider whether an appropriate relocation site exists. If USFWS approves moving animals, the approved biologist will be allowed sufficient time to move California red-legged frogs from the work site before work activities begin. Only USFWS-approved biologists will participate in activities associated with the capture, handling, and monitoring of California red-legged frogs. Bare hands will be used to capture California red-legged frogs. USFWS-approved biologists will not use soaps, oils, creams, lotions, repellents, or solvents of any sort on their hands within two hours before and during periods when they are capturing and relocating individuals. To avoid transferring disease or pathogens from handling the amphibians, USFWS-approved biologists will follow the <i>Declining Amphibian Populations Task Force Fieldwork Code of Practice</i>. <p>During O&M activities:</p> <ul style="list-style-type: none"> ▪ A USFWS-approved biologist will identify potential California red-legged frog breeding habitat within the vicinity of O&M activities, and will flag a 500-foot (152-meter) buffer. The following restrictions will apply within the buffer: (1) only manual vegetation removal will be allowed; (2) only direct (e.g., injection and cut-stump) herbicide application methods will be allowed, except when otherwise restricted; (3) no ground disturbance (e.g., digging or auguring) will be allowed; and (4) erosion-control devices will be of a material that will not entrap amphibians.
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	<ul style="list-style-type: none"> ▪ If it is not feasible to follow the above-stated measures, a pre-activity survey will be conducted no more than 24 hours before Project O&M activities begin. If ground disturbance is required, an USFWS-approved biologist will identify potential California red-legged frog upland refuge habitat within disturbance areas. Areas that may provide suitable upland refuge will be avoided to the extent feasible. Ground disturbance will not occur in California red-legged frog aquatic/breeding habitat. If an area that provides suitable upland refuge must be impacted, a USFWS-approved biologist will determine if California red-legged frogs are present using visual surveys, an endoscope, or other accepted detection method. If California red-legged frogs are detected, the area will be avoided using a buffer determined appropriate by the biologist, and a USFWS-approved monitor will remain on site to ensure that California red-legged frogs are not impacted during Project activities in the vicinity. A USFWS-approved biologist will remain on site during all activities to ensure protection of California red-legged frog or an exclusion barrier will be constructed around the work site using USFWS-approved methods and materials. Exclusion materials will be removed at the end of the work activity. Crews will inspect any trenches left open for more than 24 hours for trapped animals. Only a USFWS-approved biologist will remove trapped animals. ▪ To comply with the California red-legged frog injunction for herbicide applications, Western will ensure that, in the counties named in the injunction, there will be no ground application of any of the chemicals named in the injunction (http://www.epa.gov/espp/litstatus/redleg-frog/steps-info.htm). Currently, the no-use buffer is 60 feet (18 meters) from any aquatic feature, aquatic breeding habitat, non-breeding aquatic habitat, and upland habitat.
Location	California red-legged frog habitat
Monitoring/Reporting Action	Flag habitat for avoidance, biological monitoring
Effectiveness Criteria	California red-legged frogs and their habitat are avoided
Responsible Agency	Western
Timing	Construction and O&M
Mitigation Measure	<p>MM BIO-14: Avoidance and minimization measures for California tiger salamander and western spadefoot. To protect California tiger salamander and western spadefoot, Western will implement the following measures.</p> <p>During construction activities:</p> <ul style="list-style-type: none"> ▪ California tiger salamander presence will be assumed in all aquatic habitats for which protocol surveys have not been conducted in the year prior to construction. Uplands within 1 mile (1.6 kilometers) will be assumed to be occupied around all aquatic habitats for which protocol surveys have not been conducted ▪ If the Project may affect California tiger salamander, take authorization/permits will be obtained from the USFWS. Upon completion of the authorization/permit process, Western will implement the terms and conditions of the authorizations. ▪ Transmission towers and new access roads will be sited as far from aquatic habitats as is feasible. ▪ To the extent feasible, construction activities will take place during the dry season (generally June 1 through September 30) within 1.24 miles (2 kilometers) of aquatic habitats. If construction extends into the wet season (generally October 1 through May 31), temporary exclusion fencing will be installed 100 feet (30.5 meters) out from work areas to prevent California tiger salamanders and western spadefoots from entering construction areas as necessary. ▪ Escape ramps will be installed in all trenches or excavations to allow wildlife to escape. ▪ Biological monitoring will be provided by an agency-approved biologist during construction in all areas within 1.24 miles (2 kilometers) of aquatic habitats. The biological monitor will identify, capture, and relocate sensitive amphibians present in work areas if necessary. ▪ A 300-foot (91-meter) setback, incorporating both riparian vegetation and uplands, will be provided on all sides of aquatic habitats identified as occupied or assumed occupied by California tiger salamanders and western spadefoots. A setback may be reduced or expanded in consultation with the USFWS

Table 6-1. Mitigation Monitoring and Reporting Program

	<p>depending on whether it would (a) affect habitat or (b) result in adverse impacts to the species or the biological values of the habitat. Setbacks will maintain existing vegetation free of disturbance and new construction, equipment storage, vehicle parking, and other activities that might compact or disturb soils or vegetation or that could introduce contaminants into aquatic habitats. Setbacks will be clearly delineated during the construction.</p> <ul style="list-style-type: none"> ▪ Water quality will be maintained through implementation of appropriate erosion-control measures to reduce siltation and contaminated runoff from Project sites by maintaining vegetation within buffers and/or through the use of hay bales, filter fences, vegetative buffer strips, or other accepted equivalents. ▪ Construction and other ground disturbances will be prohibited within setbacks. The use of insecticides, herbicides, rodenticides and pesticides will occur in accordance with USEPA guidelines addressing the use of these materials in occupied California tiger salamander and western spadefoot habitat. ▪ Where aquatic sites cannot be avoided by 300 feet (91 meters) on all sides, an agency-approved biologist will survey the work site immediately prior to construction activities. If California tiger salamanders, larvae, or eggs are found, the approved biologist will contact USFWS to determine whether moving any of these life-stages is appropriate. In making this determination USFWS will consider whether an appropriate relocation site exists. If USFWS approves moving animals, the approved biologist will be allowed sufficient time to move California tiger salamanders and western spadefoots from the work site before work activities begin. Only USFWS-approved biologists will participate in activities associated with the capture, handling, and monitoring of California tiger salamanders. Bare hands will be used to capture salamanders and toads. USFWS-approved biologists will not use soaps, oils, creams, lotions, repellents, or solvents of any sort on their hands within two hours before and during periods when they are capturing and relocating individuals. To avoid transferring disease or pathogens from handling the amphibians, agency-approved biologists will follow the <i>Declining Amphibian Populations Task Force Fieldwork Code of Practice</i>. <p>During O&M activities:</p> <ul style="list-style-type: none"> ▪ A USFWS-approved biologist will identify potential California tiger salamander breeding habitat in the vicinity of O&M activities, and will flag a 500-foot buffer. The following restrictions will apply within the buffer: (1) only manual vegetation removal will be allowed; (2) only direct (e.g., injection and cut-stump) herbicide application methods will be allowed, except when otherwise restricted; (3) no ground disturbance (e.g., digging or augering) will be allowed; and (4) erosion-control devices will be of a material that will not entrap amphibians. ▪ If it is not feasible to follow the above-stated measures, a pre-activity survey will be conducted no more than 24 hours before O&M activities begin. If ground disturbance is required, a USFWS-approved biologist will identify potential CTS aestivation habitat (burrows, rock piles) within disturbance areas. CTS aestivation habitat will be avoided to the extent feasible. Ground disturbance will not occur in CTS breeding/aquatic habitat. If a burrow or other potential aestivation habitat must be impacted, a USFWS-approved biologist will determine if CTS are present within the burrow using an endoscope or other accepted detection method. If CTS are detected, the burrow will be avoided using a buffer determined appropriate by the biologist and a USFWS-approved monitor will remain on site to ensure that CTS are not impacted during Project activities in the vicinity. A USFWS-approved biologist will remain on site during all activities to ensure protection of CTS or an exclusion barrier will be constructed around the work site using USFWS-approved methods and materials. Exclusion materials will be removed at the end of the work activity. Crews will inspect any trenches left open for more than 24 hours for trapped animals. Only a USFWS-approved biologist will remove trapped animals.
Location	California tiger salamander and western spadefoot habitat
Monitoring/Reporting Action	Flag habitat for avoidance, conduct biological monitoring
Effectiveness Criteria	California tiger salamanders and western spadefoots and their habitat are avoided
Responsible Agency	Western
Timing	Construction and O&M

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Mitigation Measure	<p>MM BIO-15: Provide compensatory mitigation for impacts to listed amphibians. Western will provide compensation for permanent and temporary construction impacts to California tiger salamander and California red-legged frog aquatic and upland habitat through one or more of the following: (a) purchasing credits at a conservation bank approved by CDFW and USFWS, (b) purchasing a conservation easement, (c) donating funds to an approved in-lieu fee program, or (d) restoring habitats affected by the Project. For onsite creation or restoration, Western will develop and implement a mitigation, monitoring, and reporting plan with input from and approval by regulatory agencies that outlines performance standards and success criteria for ensuring long-term success of mitigation.</p> <p>If Western intends to eliminate aquatic habitat including wetlands, ponds, springs, and other standing water sources, and to create new, onsite habitat, then the newly created habitat will be created and filled with water prior to dewatering and destroying the existing habitat. Dewatering and relocation of aquatic habitats should occur outside of the breeding season for red-legged frogs (approximately January through June).</p> <p>If Western intends to eliminate aquatic habitat including wetlands, ponds, springs, and other standing water sources, and will not create new, onsite habitat, then dewatering of existing habitat should occur prior to commencement of construction and other site-disturbing activities. Dewatering and relocation of aquatic habitats should occur outside of the breeding season for red-legged frogs (approximately January through June). Preserve lands acquired to offset impacts to the red-legged frog must have occupied habitat of at least equal habitat value as determined by the USFWS.</p>
Location	California tiger salamander and California red-legged frog aquatic habitat
Monitoring/Reporting Action	Report permanent and temporary habitat loss and compensation including habitat location and status
Effectiveness Criteria	Habitat is avoided or compensated
Responsible Agency	Western
Timing	Prior to construction
Mitigation Measure	<p>MM BIO-16: Avoidance and minimization measures for burrowing owl. Western will protect burrowing owls by implementing the following methods derived from the CDFW <i>Staff Report on Burrowing Owl Mitigation</i> (CDFG, 2012).</p> <p>During construction activities:</p> <ul style="list-style-type: none"> ▪ In coordination with CDFW, a burrowing owl protection and monitoring plan will be developed following guidelines in the updated CDFW staff report (CDFG, 2012). It will include but may not be limited to (a) conducting a protocol survey of the Project area the year before construction begins to identify sites of wintering and breeding activity, (b) identifying measures to avoid and minimize impacts, (c) identifying restrictions on construction activities and buffer distances related to time of year, (d) determining whether burrow exclusion or closure will be necessary, and developing a plan for implementation, (e) developing mitigation measures and a compensation plan for unavoidable impacts, (f) conducting a preconstruction survey, and (g) developing a mitigation and monitoring plan to ensure success of mitigation. Compensatory mitigation could include habitat restoration or contribution to a conservation bank. <p>During O&M activities:</p> <ul style="list-style-type: none"> ▪ From February 1 to August 31, Project construction, herbicide application (with the exception of direct application), and other O&M activities will be prohibited within 250 feet (76 meters) of potential burrowing owl nesting dens (ground squirrel burrows, culverts, concrete slabs, debris piles that could support nesting burrowing owls). From September 1 through January 31, disturbance will be prohibited within 160 feet (49 meters) of potential burrowing owl dens. ▪ OR a qualified biologist will conduct nesting and wintering surveys using methods described in California Burrowing Owl Consortium 1993, CDFG 2012, or currently accepted method. If nesting or wintering activity is detected, a CDFW-approved biologist will mark and monitor an appropriate non-disturbance buffer in the vicinity of burrows that have been active within the last three years. ▪ Within the buffer zone, all Project construction and O&M activities and herbicide applications will be prohibited from February 1 to August 31.

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Location	Burrowing owl habitat
Monitoring/Reporting Action	Submit plan that describes avoidance or compensatory mitigation measures
Effectiveness Criteria	Burrowing owls and their habitat are avoided or compensated
Responsible Agency	Western
Timing	Prior to construction
Mitigation Measure	MM BIO-17: Provide compensatory mitigation for impacts to occupied burrowing owl habitat. For unavoidable impacts to burrowing owl habitat known to be occupied within the last 5 years, compensatory mitigation will be required. Compensation may take the form of (a) acquiring and dedicating lands into conservation easements; (b) purchasing mitigation credits at compensation ratios that have been approved by the CDFW; or (c) preserving area contiguous or near the acreage lost.
Location	Burrowing owl foraging and nesting habitat
Monitoring/Reporting Action	Report habitat loss and compensation status
Effectiveness Criteria	Habitat is avoided or compensated
Responsible Agency	Western
Timing	Prior to construction
Mitigation Measure	<p>MM BIO-18: Avoidance and minimization measures for California fully protected birds. To protect the California fully protected golden eagle and white-tailed kite, Western will implement the following measures. The nesting period for these species is March 1 through August 15.</p> <ul style="list-style-type: none"> ▪ For ground-breaking activities that begin outside the nesting season, a preconstruction nesting survey will not be necessary. For all ground-breaking activities that begin during the nesting season, a CDFW-approved biologist will conduct a preconstruction survey in suitable habitats for each species no more than 10 days prior to construction. The survey will encompass 0.5 miles (0.8 kilometers) in all directions from construction areas. If no nesting is detected, no further action will be required. ▪ During construction, if a golden eagle or white-tailed kite nest is detected, or if it is determined that courtship and nest initiation are underway within the survey distance, Western will establish a 0.5-mile (0.8-kilometer) no-disturbance buffer around the nest or center of activity. The buffer will be maintained until a CDFW-approved biologist has determined that the young have fledged or the nest is no longer active. If this buffer cannot feasibly be implemented, Western will contact and coordinate with CDFW well in advance of ground-disturbing activities (CDFW in litt. 2014c). ▪ During O&M, if a golden eagle or white-tailed kite nest is detected, or if it is determined that courtship and nest initiation are underway within 0.25 mile (0.4 kilometer), Western will establish a 0.25-mile (0.4-kilometer) no-disturbance buffer around the nest or center of activity; a smaller buffer may be established if a qualified biologist determines that the O&M activity will not adversely affect adults or young. ▪ When construction or O&M activities begin in a new area during the nesting season, another preconstruction survey will be completed as described above.
Location	Golden eagle and white-tailed kite habitat
Monitoring/Reporting Action	Flag nests for avoidance, biological monitoring

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Effectiveness Criteria	Golden eagles and white-tailed kites are avoided
Responsible Agency	Western
Timing	Construction and O&M
Mitigation Measure	<p>MM BIO-19: Avoidance and minimization measures for least Bell's vireo. To protect least Bell's vireo, Western will implement the following measures.</p> <ul style="list-style-type: none"> Where any construction-related activity will take place within 1000 feet (305 meters) of potential least Bell's vireo habitat during the nesting season (mid-March through September), a protocol survey will be conducted by an agency-approved biologist, in coordination with the USFWS. If nesting least Bell's vireos are not detected, no further action is required for this species. If nesting is detected, Western will establish a clearly marked no-disturbance buffer of 1000 feet (305 meters) around the nest, or center of activity if the nest cannot be detected. The buffer will be maintained until the agency-approved biologist has determined that the nest is no longer active or that the young have fledged. Biological monitoring will be provided by an agency-approved biologist during construction in all areas within 1000 feet (305 meters) of occupied habitat. The biological monitor will ensure that construction activities do not disturb nesting vireos.
Location	Least Bell's vireo habitat
Monitoring/Reporting Action	Flag nests for avoidance, biological monitoring
Effectiveness Criteria	Nesting least Bell's vireos are avoided
Responsible Agency	Western
Timing	Construction and O&M
Mitigation Measure	<p>MM BIO-20: Avoidance and minimization measures for Swainson's hawk. To protect nesting Swainson's hawks, Western will implement the following measures pursuant to guidelines from CDFW (CDFG, 1994) and the Swainson's Hawk Technical Advisory Committee (SWTAC, 2000); and pursuant to informal consultation for the Project initiated January 2014 (CDFW in litt. 2014c). The nesting season for Swainson's hawks, which encompasses the courtship and nest initiation phase, is considered by CDFW to be February 1 through September 15.</p> <p>During construction activities:</p> <ul style="list-style-type: none"> An agency-approved biologist will conduct preconstruction surveys according to guidelines presented in SWTAC 2000, which establishes five survey periods. During the first period (January 1 to March 20) potential nest locations are identified. During the second period (March 20 to April 5) Swainson's hawks are returning to traditional nesting territories during a time when most nest trees are leafless and birds and their activities are easier to detect. During the third period (April 5 to April 20) pair bonding, courtship, and nest construction are taking place and while nests may be more difficult to see, they can be inferred from increased activity. During the fourth period (April 20 to June 10) nests are difficult to detect and activity is low because adults are incubating. Surveys should not be initiated during the fourth period. During the fifth period (June 10 to July 30), young birds may be active and visible, and both adults are making many visits to the nest with prey. Three surveys will be completed in at least two of the survey periods immediately prior to Project initiation. Surveys will encompass the area within 0.5 miles (0.8 kilometers) of construction activities. In addition, if ground-disturbing activities are to take place during the breeding season (February 1 through September 15), the CDFW recommends that additional preconstruction surveys for active nests be conducted by a CDFW-approved biologist no more than 10 days prior to the start of construction. If an active Swainson's hawk nest is found, a 0.5-mile (0.8-kilometer) no-disturbance buffer will be established around the nest. If such a buffer cannot feasibly be implemented, coordination with CDFW will occur well in advance of ground-disturbing activities and the acquisition of a state incidental take permit pursuant to Fish and Game Code section 2081(b) may be warranted.

Table 6-1. Mitigation Monitoring and Reporting Program

	<p>During O&M activities:</p> <ul style="list-style-type: none"> From February 1 to September 15, a 0.25-mile buffer zone will be established and maintained around potential Swainson's hawk nest trees, within which there will be no intensive disturbance (e.g., use of heavy equipment, power saws, chippers, cranes, or draglines). This buffer may be adjusted, as assessed by a qualified biologist, based on changes in sensitivity exhibited by birds over the course of the nesting season and the type of O&M activity performed (e.g., high noise or human activity such as mechanical vegetation maintenance versus low noise or human activity such as semi-annual patrols), or a qualified biologist will conduct nest surveys using methods described in SHTAC 2000 (or more current protocol) to determine absence. Within 0.25 mile of an active nest, routine O&M activities will be deferred until after the young have fledged or until it is determined by a CDFW-approved biologist that the activities will not adversely affect adults or young.
Location	Swainson's hawk habitat
Monitoring/Reporting Action	Flag nests for avoidance, biological monitoring
Effectiveness Criteria	Nesting Swainson's hawks are avoided
Responsible Agency	Western
Timing	Construction and O&M
Mitigation Measure	MM BIO-21: Provide compensatory mitigation for impacts to Swainson's hawk foraging habitat. Compensatory mitigation will be required for loss of Swainson's hawk foraging habitat using compensation ratios provided in CDFG 1994 (or more current document) or a ratio determined through coordination with CDFW. As provided in CDFW 2014c, compensatory mitigation for Swainson's hawk will also be required for loss of nest trees.
Location	Swainson's hawk foraging and nesting habitat
Monitoring/Reporting Action	Report habitat loss and compensation status
Effectiveness Criteria	Habitat is avoided or compensated
Responsible Agency	Western
Timing	Prior to construction
Mitigation Measure	<p>MM BIO-22: Avoidance and minimization measures for tricolored blackbird. Tricolored blackbird nests colonially in a variety of densely vegetated habitats. The nesting season for tricolored blackbird is March 1 through August 15.</p> <p>During construction activities:</p> <ul style="list-style-type: none"> For ground-breaking activities that begin or take place outside the nesting season, a preconstruction nesting survey will not be necessary. For all ground-breaking activities that begin during the nesting season, a biologist experienced with tricolored blackbirds and their range of habitats will conduct a preconstruction survey no more than 10 days prior to construction. The survey will encompass 500 feet (152 meters) in all directions from construction areas. If no nesting is detected, no further action will be required. If nesting is detected, or if it is determined that courtship and nest initiation are underway within 500 feet (152 meters) of a construction or laydown area, Western will establish a clearly marked 500-foot (152-meter) no-disturbance buffer around the outer edges of the habitat. The buffer will be maintained until a CDFW-approved biologist has determined that the colony is no longer active.

Table 6-1. Mitigation Monitoring and Reporting Program

	<ul style="list-style-type: none"> ▪ If tricolored blackbirds begin nesting near construction or laydown areas after construction has started, a clearly marked no-disturbance buffer will be established around the colony that is the maximum feasible size for the circumstances. The buffer will be maintained until the colony is no longer active. ▪ Biological monitoring will be provided by a CDFW-approved biologist during construction in all areas within 500 feet (152 meters) of occupied habitat. The biological monitor will ensure that construction activities do not disturb the colony. ▪ When construction begins in a new area during the nesting season, another preconstruction survey will be completed as described above. <p>During O&M activities:</p> <ul style="list-style-type: none"> ▪ From March 1 to August 15, herbicide application (with the exception of direct application) and vegetation clearing/disturbance will be prohibited in marshes, willows, and blackberry thickets OR a qualified biologist will conduct a nesting survey prior to O&M activities. If nesting activity is detected, a qualified biologist will mark and monitor an appropriate buffer zone around the nesting colony within which all O&M activities and herbicide applications will be prohibited from March 1 to August 15.
Location	Tricolored blackbird habitat
Monitoring/Reporting Action	Flag breeding colonies for avoidance, biological monitoring
Effectiveness Criteria	Tricolored blackbird breeding colonies are avoided
Responsible Agency	Western
Timing	Construction and O&M
Mitigation Measure	<p>MM BIO-23: Avoidance and minimization measures for other special-status and native birds. To protect loggerhead shrike, long-eared owl, Modesto song sparrow, northern harrier, short-eared owl, yellow-headed blackbird, and other non-listed birds protected by the MBTA and California Fish and Game Code, Western will implement the following measures. The nesting season for these species is March 1 through August 31.</p> <ul style="list-style-type: none"> ▪ For ground-breaking activities that begin or take place outside the nesting season, a preconstruction nesting survey will not be necessary. For all ground-breaking activities that begin during the nesting season, a CDFW-approved biologist will conduct a preconstruction survey in suitable habitats for each of these species no more than 10 days prior to construction. The survey will encompass 250 feet (76 meters) in all directions from construction areas for loggerhead shrike, Modesto song sparrow, and yellow-headed blackbird, and 500 feet (152 meters) for long-eared owl, northern harrier, and short-eared owl. For species covered by the MBTA and California Fish and Game Code, but with no other special status, the survey area will encompass a sufficient area around the work site to identify nests that are present and determine their status. A sufficient area means any nest within an area that could potentially be affected by the Project. If no nesting is detected, no further action will be required. ▪ During construction, if nests of loggerhead shrike, long-eared owl, Modesto song sparrow, northern harrier, short-eared owl, or yellow-headed blackbird are detected, or if it is determined that courtship and nest initiation are underway within this survey distance, Western will establish a clearly marked 250-foot (76-meter) no-disturbance buffer around each nest or center of activity for loggerhead shrike, Modesto song sparrow, and yellow-headed blackbird, and a 500-foot (152-meter) buffer around each nest or center of activity for long-eared owl, northern harrier, and short-eared owl. Buffers will be maintained until a CDFW-approved biologist has determined that the young have fledged or the nest is no longer active. ▪ During O&M, if nests of loggerhead shrike, long-eared owl, Modesto song sparrow, northern harrier, short-eared owl, and/or yellow-headed blackbird are detected, or if it is determined that courtship and nest initiation are underway within the survey distance, Western will establish a clearly marked 250-foot (76-meter) no-disturbance buffer around each nest or center of activity for loggerhead shrike, Modesto song sparrow, and yellow-headed blackbird, and a 500-foot (152-meter) buffer around each nest or center of activity for long-eared owl, northern harrier, and short-eared owl; a smaller buffer may be established if the biologist determines that the O&M activity will not adversely affect adults or young.

Table 6-1. Mitigation Monitoring and Reporting Program

	<ul style="list-style-type: none"> Identified nests will be surveyed prior to construction or O&M activities to establish a behavioral baseline. Once work commences, all nests of MBTA- and Fish and Game Code-covered birds that are not designated as any other special status will be monitored during work activities to detect any behavioral changes as a result of the Project. If behavioral changes are observed, the work causing that change will cease and CDFW and USFWS will be contacted for additional avoidance and minimization measures. OR, if monitoring of identified nests by an agency-approved wildlife biologist is not feasible, CDFW and USFWS recommend a minimum no-disturbance buffer of 250 feet (76 meters) around active nests of non-listed passerine-type bird species and a 500-foot (152-meter) no-disturbance buffer around the nests of non-listed raptors until the breeding season has ended, or until an agency-approved biologist has determined that the young have fledged and are no longer reliant upon the nest or parental care for survival. Variance from these no-disturbance buffers may be implemented when there is compelling biological or ecological reason to do so, such as when Project activities would be concealed from a nest site by topography. Any variance from these buffers will be supported by an agency-approved biologist and it is recommended that CDFW and USFWS be notified in advance of implementation of a no-disturbance buffer variance. When construction or O&M begins in a new area during the nesting season, another preconstruction survey will be completed as described above.
Location	Nesting bird habitats
Monitoring/Reporting Action	Flag nests for avoidance, biological monitoring, notify CDFW and USFWS of no-disturbance buffer variances
Effectiveness Criteria	Nesting birds are avoided
Responsible Agency	Western
Timing	Construction and O&M
Mitigation Measure	<p>MM BIO-24: Avoidance and minimization measures for American badger. To protect American badger, Western will implement the following measures.</p> <ul style="list-style-type: none"> Concurrent with other required surveys (e.g., kit fox and burrowing owl), a CDFW-approved biologist will conduct a preconstruction survey to identify the presence of American badgers. If this species is not found, no further action will be required. If badgers are identified, they will be passively relocated using burrow exclusion (e.g., installing one-way doors on burrows) or similar CDFW-approved exclusion methods. In unique situations it might be necessary to actively relocate badgers (e.g., using live traps) to protect individuals from potentially harmful situations. Such relocation will be performed with advance CDFW coordination and concurrence. When unoccupied dens are encountered outside of work areas but within 100 feet (30.5 meters) of proposed activities, vacated dens will be inspected to ensure they are empty and temporarily covered using plywood sheets or similar materials. If badger occupancy is determined at a given site within a construction area, construction will be halted. Depending on the den type, reasonable and prudent measures to avoid harming badgers will be implemented and may include seasonal limitations on Project construction near the site (i.e., restricting the construction period to avoid spring-summer pupping season), establishing a construction exclusion zone around the identified site, or resurveying the den a week later to determine species presence or absence.
Location	American badger habitat
Monitoring/Reporting Action	Flag active dens for avoidance, biological monitoring
Effectiveness Criteria	Badgers and active dens are avoided
Responsible Agency	Western
Timing	Construction and O&M

Table 6-1. Mitigation Monitoring and Reporting Program

Mitigation Measure	<p>MM BIO-25: Avoidance and minimization measures for special-status bats. To protect Townsend's big-eared bat and other special-status bats, Western will minimize impacts by performing preconstruction surveys and creating no-disturbance buffers around active bat-roosting sites, especially maternity roosts and especially during the bat pupping season (April 1 through August 15) for Project construction and O&M activities using the following measures.</p> <ul style="list-style-type: none"> ▪ Before construction or O&M activities within 250 feet (76 meters) of trees, cliffs, or caves, a CDFW-approved bat biologist will survey for special-status bats. If no evidence of bats (i.e., direct observation, guano, staining, or strong odors) is observed, no further mitigation will be required. If evidence of bats is observed, Western will implement the following measures to avoid potential impacts on breeding populations: <ul style="list-style-type: none"> – A no-disturbance buffer of 250 feet (76 meters) will be created around active bat roosts or occupied roosting habitat during the pupping season (April 1 through August 15). Bat roosts initiated during construction will be presumed to be unaffected by the indirect effects of noise and construction disturbances. However, the direct take of individuals will be prohibited without further coordination with CDFW. – Removal of trees showing evidence of active bat use will occur during the periods least likely to affect bats in winter hibernacula or maternity roosts, as determined by a CDFW-approved bat biologist (generally between August 15 and October 15, and between February 15 and April 1). If the exclusion of bats from potential roost sites is necessary to prevent indirect impacts due to construction noise and adjacent human activity, bat exclusion activities (e.g., installation of netting to block roost entrances) will be conducted by a CDFW-approved biologist.
Location	Active bat roosts
Monitoring/Reporting Action	Flag active roosts for avoidance, biological monitoring, exclude bats from potential roost sites
Effectiveness Criteria	Active bat roosts are avoided
Responsible Agency	Western
Timing	Construction and O&M
Mitigation Measure	<p>MM BIO-26: Avoidance and minimization measures for special-status kangaroo rats. Western will either assume presence of giant and short-nosed kangaroo rats and implement measures to avoid or minimize impacts, or conduct research to assess habitat potential. Research could take the form of (a) evaluating the Project area using a model based on satellite imagery currently being applied to giant kangaroo rat habitats throughout their range (T. Bean pers. comm.) or other habitat models or (b) conducting protocol trapping in potentially suitable areas immediately prior to construction. If research indicates that kangaroo rats are not likely to be present, no further action will be required. If Western either assumes presence or research indicates that either kangaroo rat species could be present, Western will implement the following measures.</p> <ul style="list-style-type: none"> ▪ Prior to construction or O&M activities, any active burrows in the vicinity of work sites will be flagged and marked with a burrow number. Exclusion zones with a 30-foot (9-meter) radius will be established around any active burrow. Construction activities, with the exception of essential vehicle operation on existing roads and foot travel, will be prohibited within this exclusion zone. ▪ A biological monitor will be on site for all activities within suitable kangaroo rat habitat. Prior to construction or O&M activities each day within suitable habitat, the monitor will conduct a brief ground survey of the site to verify that no kangaroo rats are present within the site. The biological monitor will have the authority to stop and/or redirect Project activities in coordination with the project manager and Western's natural resources staff to ensure the protection of giant kangaroo rats. The biological monitor will complete daily reports/logs summarizing activities and environmental compliance. ▪ Installation of barrier fencing around the work site may be used to further limit the risk of direct impacts to kangaroo rats where necessary. Barrier fencing will at no time inhibit the kangaroo rat's ability to move between its den and other habitats that allow breeding, feeding, and sheltering. All barriers will be removed at the end of Project activities. ▪ If giant kangaroo rats are detected within a disturbance site, through coordination with USFWS and if necessary, they may be relocated to a suitable site away from Project activities but as close to the disturbance site as feasible. Relocation methods will follow the recommendations in Tennant et al. (2013) or other USFWS-approved methods.

Table 6-1. Mitigation Monitoring and Reporting Program

Location	Giant kangaroo rat and short-nosed kangaroo rat habitats
Monitoring/Reporting Action	Report results of research assessing habitat potential, flag active burrows for avoidance, install barrier fencing to exclude animals from work areas, biological monitoring, submit daily reports summarizing activities and environmental compliance
Effectiveness Criteria	Giant kangaroo rats and short-nosed kangaroo rats and their active burrows are avoided
Responsible Agency	Western
Timing	Construction and O&M
Mitigation Measure	<p>MM BIO-27: Avoidance and minimization measures for San Joaquin kit fox. To protect San Joaquin kit fox, Western will implement the following measures.</p> <ul style="list-style-type: none"> ▪ To the extent feasible, Western will avoid Project construction and O&M activities that require ground disturbance or off-road travel between December 1 and May 31, the kit fox breeding/pupping season. ▪ Prior to Project construction or O&M activities that involve ground disturbance, off-road travel, or vegetation management in suitable kit fox habitat, an agency-approved biologist will conduct habitat/den surveys in accordance with the “Small Projects” recommendations in the 2011 USFWS Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox Prior to or During Ground Disturbance (USFWS, 2011c). Any suitable den (i.e., burrow with an entrance greater than 4 inches in diameter) will be monitored for evidence of kit fox use by placing either a tracking medium or wildlife monitoring cameras at the entrance for at least three consecutive nights. Active dens will be marked with a 100-foot (30.5-meter) buffer and natal or pupping dens (December 1 through May 31) will be marked with a 1,000-foot (305-meter) buffer. Construction activities, with the exception of essential vehicle operation on existing roads and foot travel, will be prohibited within this buffer area. ▪ If activities must occur within 100 feet (30.5 meters) of an active den, San Joaquin kit foxes will be excluded from the den. Methods will follow those outlined in USFWS 2011c. The den will be monitored for at least five consecutive nights from initial observation to allow the animal to move to another den during its normal activity. Use of this den may be discouraged by partially plugging the den in such a manner that any resident animal can easily escape but may be discouraged from re-entering. Once the kit fox has abandoned the den or is still present after five or more consecutive days of partial plugging and monitoring, the den will be plugged or excavated (by hand as feasible) when the qualified biologist determines that the animal is absent due to normal activities. Natal dens will not be destroyed or disturbed during breeding/pupping season (December 1 through May 31). ▪ A biological monitor will be on site for any work activities within suitable kit fox habitat. Prior to construction activities each day, the monitor will conduct a brief ground survey of the site to verify that no kit foxes are present. The biological monitor will have the authority to stop and/or redirect Project activities in coordination with the project manager and Western’s natural resources staff to ensure the protection of kit foxes. The biological monitor will complete daily reports/logs summarizing activities and environmental compliance. ▪ Installation of barrier fencing around the work site may be used to further limit the risk of direct impacts on kit fox. If necessary, barrier fencing will be used to prevent kit foxes from entering the work site and getting injured or killed by equipment but will at no time inhibit the kit fox’s ability to move between its den and other habitats that allow breeding, feeding, and sheltering. All barriers will be removed at the end of construction or O&M work. ▪ Any excavated, steep-walled holes or trenches more than 2 feet (0.6 meter) deep will be covered at the close of each working day with plywood or similar materials or escape ramps will be installed in the hole or trench. Before any hole or trench is filled, it will be inspected for trapped animals. ▪ All construction pipes, culverts, or similar structures with a diameter of 4 inches (10 centimeters) or more that are stored at a construction site overnight will be thoroughly inspected for kit foxes before the pipe is buried, capped, or moved. If a kit fox is discovered inside a pipe, that section of pipe will not be moved until the kit fox has left the pipe. ▪ Use of rodenticides and herbicides in the Project area will be limited to the extent feasible. Use of any such compounds will observe label and other restrictions mandated by the U.S. Environmental Protection Agency, California Department of Food and Agriculture, and other state and federal legislation. If rodent control must be conducted, zinc phosphide will be used as feasible because it presents a lower risk to kit foxes.

Table 6-1. Mitigation Monitoring and Reporting Program

Location	San Joaquin kit fox habitat
Monitoring/Reporting Action	Flag habitat and dens for avoidance, biological monitoring, install exclusion fencing, submit daily reports summarizing activities and environmental compliance
Effectiveness Criteria	San Joaquin kit fox and dens are avoided; habitat is avoided or compensated
Responsible Agency	Western
Timing	Construction and O&M
Mitigation Measure	MM BIO-28: Provide compensatory mitigation for impacts to San Joaquin kit fox. Compensatory mitigation will be required for temporary and permanent impacts to San Joaquin kit fox habitat. Compensation may take the form of (a) acquiring and dedicating lands into conservation easements or (b) purchasing mitigation credits at compensation ratios that have been approved by state and federal agencies. Impacts within conservation easements may require compensatory mitigation at higher ratios than impacts outside of easements, and mitigation will be consistent with the requirements of the easement.
Location	San Joaquin kit fox habitat
Monitoring/Reporting Action	Report habitat loss and compensation status
Effectiveness Criteria	Habitat is avoided or compensated
Responsible Agency	Western
Timing	Prior to construction
Mitigation Measure	<p>MM BIO-29: Avoidance and Minimization Measures for Vernal Pool and Seasonal Wetland Habitats. During construction and O&M activities in the vicinity of vernal pools, vernal pool grasslands, and seasonal wetlands, Western will implement the following measures.</p> <p>During O&M Category A Activities (see Appendix D):</p> <ul style="list-style-type: none"> ▪ Vehicle access will be permitted only on well-established roads unless soils are dry. Soils will be considered sufficiently dry for vehicle access when they resist compaction, and after annual plants have set seed (generally June 1 to September 30, or as determined by qualified personnel based on personal observation of the soils). For patrolling the ROW off of established roads in a pickup truck, or for inspecting hardware on structures with a bucket truck, vernal pools, vernal pool grasslands, and seasonal wetlands will be avoided by 50 feet (15 meters) during the wet season (generally October 1 to May 31). No avoidance will be necessary if soils are completely dry. <p>During construction and O&M Category B and C activities (Appendix D) in the vicinity of vernal pools, vernal pool grasslands, and seasonal wetlands:</p> <ul style="list-style-type: none"> ▪ Vehicle access will be permitted only on well-established roads unless soils are dry. Soils will be considered sufficiently dry for vehicle access when they resist compaction, and after annual plants have set seed (generally June 1 to September 30, or as determined by an agency-approved biologist based on personal observation of the soils). If vegetation management activities were proposed within 250 feet ((76 meters) of a vernal pool, vernal pool grassland, or seasonal wetland, an agency-approved biologist will be present at all times to ensure the protection of the work-area limits below OR qualified personnel will clearly flag or fence the limits of the work area, according to limits presented in the following, prior to the maintenance activity. (The herbicide restriction measures generated by the PRESCRIBE database supersede those below where they are different.) ▪ Mixing or application of pesticides, herbicides, or other potentially toxic chemicals will be prohibited. ▪ Herbicide application to target vegetation with hand-held applicator (cut-stump treatment) will be prohibited within 25 feet (7.6 meters) in the wet season

Table 6-1. Mitigation Monitoring and Reporting Program

	<p>(generally October 1 to May 31) and allowed up to the edge of the pool or seasonal wetland in the dry season (generally June 1 to September 30).</p> <ul style="list-style-type: none"> ▪ Herbicide application with power sprayers for spot treatment and selective elimination of target species will be prohibited within 100 feet (30.5 meters) in any season. ▪ Broadcast herbicide application by vehicle with boom for treating large or dense areas of the ROW will be prohibited within 150 feet (45.7 meters) in any season. ▪ Manual clearing of vegetation (chainsaw, axe, clippers) will be allowed up to the edge of the pool or seasonal wetland in the wet season (generally October 1 to May 31); a buffer will not be necessary in the dry season (generally June 1 to September 30). ▪ Mechanical clearing of vegetation (heavy-duty mowers, crawler tractors, or chippers) will be prohibited within 100 feet (30.5 meters) in the wet season (generally October 1 to May 31); a buffer will not necessary in the dry season (generally June 1 to September 30). ▪ For ground-disturbing activities, a 50-foot (15-meter) wet season or 25-foot (7.6-meter) dry season buffer zone from the edge of the vernal pool or wetland will be maintained and the vernal pool or wetland will be protected from siltation and contaminant runoff by use of erosion control. Erosion-control materials will be of a tightly woven natural fiber netting or similar material that will not entrap reptiles and amphibians (e.g., coconut coir matting). No monofilament plastics will be used for erosion control near vernal pools and seasonal wetlands. Erosion-control measures will be placed between the outer edge of the buffer and the activity area. All fiber rolls and hay bales used for erosion control will be certified as free of noxious weed seed. If work must occur within the buffer, the disturbance will not alter the hydrologic integrity of the wetland. ▪ For activities such as installation or repair of underground components (water, power, communication, or ground electrical line) or soil borings, a 250-foot (76-meter) buffer zone will be maintained. A smaller buffer could be approved after a site assessment by an agency-approved biologist, but must include silt fencing or other sediment control, to be established no less than 50 feet (15 meters) from the wetland boundary. If work must occur within the buffer, the disturbance will not alter the hydrologic integrity of the wetland.
Location	Vernal pools, vernal pool grasslands, and seasonal wetlands
Monitoring/Reporting Action	Flag for avoidance, conduct biological monitoring
Effectiveness Criteria	Effects to vernal pools, vernal pool grasslands, and seasonal wetlands are avoided or minimized
Responsible Agency	Western
Timing	Construction and O&M
Mitigation Measure	<p>MM BIO-30: Avoidance and Minimization Measures for Sensitive Wetland Habitats. During construction and O&M activities in the vicinity of seeps, springs, ponds, lakes, rivers, streams, and marshes, and their associated habitats, Western will implement the following measures.</p> <p>During O&M Category A activities (see Appendix D):</p> <ul style="list-style-type: none"> ▪ The following activities will be prohibited at all times within 100 feet (30.5 meters) of a seep, spring, pond, lake, river, stream, or marsh, and their associated habitats: <ul style="list-style-type: none"> – vehicle access, except on existing access and maintenance roads – dumping, stockpiling, or burying of any material – mixing of pesticides, herbicides, or other potentially toxic chemicals – open petroleum products <p>During construction and O&M Category B and C activities (see Appendix D):</p> <ul style="list-style-type: none"> ▪ The following activities will be prohibited at all times within 100 feet (30.5 meters) of a seep, spring, pond, lake, river, stream, or marsh, and their associated

Table 6-1. Mitigation Monitoring and Reporting Program

	<p>habitats:</p> <ul style="list-style-type: none"> – vehicle access, except on existing access and maintenance roads – dumping, stockpiling, or burying of any material, except as required for specific O&M activities such as rip-rap – mixing of pesticides, herbicides, or other potentially toxic chemicals – open petroleum products <ul style="list-style-type: none"> ▪ For vegetation management or maintenance within 100 feet (30.5 meters) of any seep, spring, pond, lake, river, stream, or marsh, or any of their associated habitats, the following work-area limits will be provided (the herbicide restriction measures generated by the PRESCRIBE database supersede those below where they are different): <ul style="list-style-type: none"> – Only manual clearing of vegetation will be permitted – Foliar application of herbicides will be prohibited. Only cut-stump treatments of target vegetation will be allowed using herbicide approved for aquatic use by the EPA and in coordination with the appropriate land manager. ▪ For ground-disturbing activities, a 100-foot (30.5-meter) buffer zone will be maintained from the edge of the seep, spring, pond, lake, river, stream, marsh, or their associated habitats for protection from siltation and runoff of contaminants by use of erosion-control measures. If work must occur within the buffer, the disturbance will not alter the hydrologic integrity of the wetland. Erosion-control materials will be of a tightly woven natural fiber netting or similar material that will not entrap reptiles and amphibians (e.g., coconut coir matting). No monofilament plastics will be used for erosion control near seeps, springs, ponds, lakes, rivers, streams, or marshes. Erosion-control measures will be placed between the outer edge of the buffer and the activity area. All fiber rolls and hay bales used for erosion control will be certified as free of noxious weed seed. ▪ Western will obtain applicable section 404 discharge and 401 water-quality permits prior to any maintenance activities that must take place within jurisdictional wetlands or other waters of the U.S. These will be coordinated with USACE and RWQCB as needed. ▪ Dewatering work for maintenance operations adjacent to or encroaching on seeps, springs, ponds, lakes, rivers, streams, or marshes will be conducted to prevent muddy water and eroded materials from entering the water or marsh. ▪ All stream crossings will be constructed such that they reduce the potential for stream flows to result in increased scour, washout, or disruption of water flow. To the extent feasible, stream crossings will be located in stream segments without riparian vegetation, and structure footings will be installed outside of stream banks. Should Western need to modify existing access roads or install new access roads, they will be built at right angles to streams and washes to the extent feasible. Trees providing shade to water bodies will be trimmed only to the extent necessary and will not be removed unless they presented a specific safety concern. ▪ Trees that must be removed will be felled to avoid damaging riparian habitat. They will be felled out of and away from the stream maintenance zone and riparian habitat, including springs, seeps, bogs, and any other wet or saturated areas. Trees will not be felled into streams in a way that will obstruct or impair the flow of water, unless instructed otherwise. Tree removal that could cause streambank erosion or result in increased water temperatures will not be conducted in and around streams. Tree removal in riparian or wetland areas will be done only by manual methods.
Location	Seeps, springs, ponds, lakes, rivers, streams, and marshes, and their associated habitats
Monitoring/Reporting Action	Flag for avoidance, conduct biological monitoring
Effectiveness Criteria	Effects to sensitive wetlands habitats are avoided or minimized
Responsible Agency	Western
Timing	Construction and O&M

Table 6-1. Mitigation Monitoring and Reporting Program

Mitigation Measure	<p>MM BIO-31: Provide compensatory mitigation for impacts to sensitive plant communities. Western will purchase credits in an appropriate mitigation bank or habitat conservation bank for the vegetation community to be impacted. If a mitigation bank is not available Western will contribute in-lieu fees to a mitigation bank or habitat conservation bank that can provide appropriate mitigation for the vegetation type. Western will work with the appropriate resource agency (USFWS or CDFW) to ensure adequate compensation.</p> <p>If no mitigation bank, conservation bank, or in-lieu-fee compensation is available then Western will prepare a mitigation, monitoring, and reporting plan that describes the compensatory mitigation measures that will be implemented for these vegetation communities. The mitigation plan will be submitted to the CDFW for approval and will outline performance standards and success criteria for ensuring long-term success of mitigation.</p> <p>Impacts within conservation easements may require compensatory mitigation at higher ratios than impacts outside of easements, and mitigation will be consistent with the requirements of the easement.</p>
Location	Special-status vegetation communities
Monitoring/Reporting Action	Report habitat loss and compensation status
Effectiveness Criteria	Habitat is avoided or compensated
Responsible Agency	Western
Timing	Prior to construction
Mitigation Measure	<p>MM BIO-32: Provide compensatory mitigation for impacts to wetlands and waters. Compensation for loss of wetlands and waters will depend on habitat value and integrity, and may take the form of creation, restoration, enhancement, or preservation. Federal and state agencies have a no-net-loss of wetlands policy, which requires that any permanent loss of wetlands be mitigated. Mitigation can be accomplished through purchase of credits in an approved wetland mitigation bank or contribution of in-lieu fees to a conservation bank or other conservation organization that will create the wetlands as mitigation/compensation for impacts from the Project. If these options are not available then mitigation will be accomplished by the creation of new wetlands on site or in an appropriate off-site location. For creation of new wetlands, Western will develop and implement a wetland mitigation, monitoring, and reporting plan in compliance with USACE and RWQCB guidelines. The plan will outline performance standards and success criteria for ensuring long-term success of mitigation. All newly created wetlands must be monitored and maintained for a minimum of 5 years to ensure achievement of performance standards and success criteria. Annual reporting to the USACE and RWQCB are required as part of monitoring.</p>
Location	Wetlands and waters of the U.S. and state
Monitoring/Reporting Action	Report habitat loss and compensation status
Effectiveness Criteria	Wetlands and waters of the U.S. and state are avoided or compensated
Responsible Agency	Western
Timing	Prior to construction

Table 6-1. Mitigation Monitoring and Reporting Program

Mitigation Measure	<p>MM CUL-1: Prepare and Implement Archaeological Resource Management and Treatment Plan for Unique Archeological Resources. In the case of the inadvertent discovery of a unique archaeological resource, Western will have a Secretary of Interior–qualified archaeologist prepare and implement an Archaeological Resource Management and Treatment Plan that specifies the treatment of the resources. Prior to implementation, this document shall be submitted for review to the Authority as CEQA Lead Agency. This plan shall be tailored to the specific needs of the project area and the particular resources present there. The proposed Archaeological Resources Management and Treatment Plan must minimally address the following:</p> <ul style="list-style-type: none"> ▪ A general research design shall be developed that: <ul style="list-style-type: none"> – Charts a timeline of all research activities. – Recapitulates any existing paleoenvironmental, prehistoric, ethnohistoric, ethnographic, and historic contexts to create a comprehensive historic context for the project vicinity. – Poses research questions and testable hypotheses specifically applicable to the resource types encountered. – Clearly articulates why it is in the public interest to address the research questions that it poses. ▪ Artifact collection, retention/disposal, and curation policies shall be discussed, as related to the research questions formulated in the research design. These policies shall apply to archaeological materials and documentation resulting from evaluation and data recovery of unique archaeological resources. ▪ Person(s) expected to perform each of the tasks, their responsibilities, and the reporting relationships between project construction management and the mitigation and monitoring team shall be identified. ▪ The manner in which Native American observers or monitors shall be included, the procedures to be used to select them, and their roles and responsibilities shall be described. ▪ All impact-avoidance measures (such as flagging or fencing) to prohibit or otherwise restrict access to sensitive resource areas that are to be avoided during ground disturbance, construction, and/or operation shall be described. Any areas where these measures are to be implemented shall be identified. The description shall address how these measures would be implemented prior to the start of ground disturbance and how long they would be needed to protect the resources from project-related impacts. ▪ The commitment to curate of all archaeological materials retained as a result of the archaeological investigations (survey, testing, data recovery), in accordance with CEQA Lead Agency requirements and the California State Historical Resources Commission's <i>Guidelines for the Curation of Archaeological Collections (HRC, 1993)</i>, into a retrievable storage collection in a public repository or museum shall be stated.
Location	Area surrounding archaeological materials.
Monitoring/Reporting Action	Notify Western's Regional Preservation Officer (RPO), prepare and implement archaeological resource management and treatment plan.
Effectiveness Criteria	Treatment and reporting of archaeological resource completed in accordance with best practices and the standards set forward by the California Office of Historic Preservation in "Guidelines for Archaeological Research Designs" and the Secretary of the Interior's "Standards for Archeological Documentation."
Responsible Agency	Western
Timing	Construction and O&M
Mitigation Measure	<p>MM CUL-2: Treatment of Inadvertent Discovery of Human Remains. If human remains are encountered, Western's Regional Preservation Official (RPO) and the relevant county coroner shall be notified within 24 hours of the discovery. No further excavation or disturbance of the site or any nearby area reasonably suspected to overlie potential remains shall occur until the relevant county coroner has determined the appropriate treatment and disposition of the human remains. If the coroner determines that the remains are or are believed to be Native American, they will contact the NAHC, who will notify a designated most likely descendant (MLD). The MLD will inspect the site and will determine, in consultation with the property owner and Western's RPO, the disposition of the remains.</p>

Table 6-1. Mitigation Monitoring and Reporting Program

Location	Area surrounding human remains.
Monitoring/Reporting Action	Perform appropriate treatment of human remains in accordance with professional ethics and California regulations.
Effectiveness Criteria	<ul style="list-style-type: none"> • The removal of the human remains performed in a scientific manner that minimizes damage to the remains. • The process of removing the remains and eventual disposition of the remains occurs in a way that satisfies all involved parties.
Responsible Agency	Western
Timing	Construction and O&M
Mitigation Measure	MM GEO-1: Conduct Geotechnical Investigations and Implement Project Design Recommendations. A California-registered Professional Geotechnical Engineer shall evaluate the potential for geotechnical hazards and unstable slopes on the centerline route and areas of new road construction or widening of roads with slopes with more than a 15 percent gradient. Geological hazards shall be evaluated during final design specification for each structure location and road construction area. Project design recommendations will include measures to stabilize and protect Project structures from geologic hazards. Geologically unstable sites will be avoided or stabilized prior to construction. Additionally, expansive soils (such as vertisols) will be avoided or stabilized prior to tower installation.
Location	Entire Project area
Monitoring/Reporting Action	Report results of geotechnical investigations.
Effectiveness Criteria	Geotechnical hazards and unstable slopes are avoided or stabilized
Responsible Agency	Western
Timing	Prior to construction
Mitigation Measure	MM NOISE-1: Provide construction notification. Notice shall be mailed no less than 15 days prior to construction to all residents, property owners, businesses, and public agencies that have facilities within 500 feet of the project area. The notice shall state the type of construction activities that will be conducted, and the location and duration of construction.
Location	Within 500 feet pf the Project Area.
Monitoring/Reporting Action	Notify affected parties.
Effectiveness Criteria	All parties are notified 15 days prior to construction.
Responsible Agency	Western
Timing	Construction

Table 6-1. Mitigation Monitoring and Reporting Program

Mitigation Measure	<p>MM NOISE-2: Implement Best Management Practices for construction noise. Western shall implement the following noise-suppression techniques during construction and major maintenance activities to avoid violations of local noise ordinances and minimize exposure of noise-sensitive receptors.</p> <ul style="list-style-type: none"> ▪ Confine construction noise to daytime, weekday hours (7:00 AM to 7:00 PM) or an alternative schedule established by the local jurisdiction or land manager in areas within 1,000 feet of a sensitive receptor. ▪ All vehicles and equipment would be equipped with noise suppression devices that are no less effective than those originally installed by the manufacturer. ▪ Place construction equipment and route construction traffic away from sensitive receptors where feasible. ▪ Minimize unnecessary construction vehicle use and idling time.
Location	Entire Project area
Monitoring/Reporting Action	Report compliance and construction schedule to the appropriate local jurisdictions.
Effectiveness Criteria	Local noise ordinances are not violated.
Responsible Agency	Western
Timing	Construction and O&M
Mitigation Measure	<p>MM PALEO-1: Conduct Preconstruction Survey. A qualified paleontologist will be retained to conduct a field reconnaissance survey of the Project area prior to any ground-disturbing activities. Any required permits will be obtained prior to the survey. Survey areas will include the entire corridor right-of-way, plus any additional easements, such as for substations, work or storage areas, or access roads. The purpose of the field survey will be to visually inspect the ground surface for exposed fossils or traces thereof and to evaluate geologic exposures for their potential to contain preserved fossil material at the subsurface. Only Project areas (as defined above) classified as having a PFYC Class 3 or higher will be subject to a pedestrian survey. Particular attention will be paid to rock outcrops, both inside and in the vicinity of the Project area, where accessible, and any areas where geologic sediments are well exposed. Areas determined to have a PFYC Class 1 or 2, or areas that are heavily disturbed or otherwise obscured by heavy vegetation will not require a field survey. Where possible, activities and structures should be located in areas of lower sensitivity for encountering paleontological resources.</p>
Location	Entire Project area
Monitoring/Reporting Action	Document results of field reconnaissance surveys and permit acquisition.
Effectiveness Criteria	Impacts to scientifically important paleontological resources are avoided during ground-disturbing activities.
Responsible Agency	Western
Timing	Prior to construction, Construction
Mitigation Measure	<p>MM PALEO-2: Document all Finds. All fossil occurrences observed during the course of fieldwork, significant or not, will be documented and recorded at the time of discovery. The data collected for each fossil occurrence should include, at a minimum, the following information: Universal Transverse Mercator (UTM) coordinates, approximate elevation, description of taxa, lithologic description, and stratigraphic context (if known). In addition, each locality will be photographically documented with a digital camera. If feasible, with prior consent of the landowner(s), all significant or potentially significant fossils will be collected at the time they are observed in the field. If left exposed to the elements, fossil materials are subject to erosion and weathering. If the fossil discovery is too large to collect during the survey (e.g., a dinosaur skeleton or bone bed) and requires a large-scale salvage effort, then it will be documented and a mitigation strategy will be devised pursuant to SVP (2010) guidelines.</p>

Table 6-1. Mitigation Monitoring and Reporting Program

Location	Entire Project area
Monitoring/Reporting Action	Document and record fossil occurrences at the time of discovery. If feasible and with prior consent, collect fossils at the time they are observed.
Effectiveness Criteria	Impacts to scientifically important paleontological resources are avoided during ground-disturbing activities.
Responsible Agency	Western
Timing	Prior to construction, Construction
Mitigation Measure	MM PALEO-3: Conduct Worker's Environmental Awareness Training. Prior to the start of Project activities, all field personnel will receive worker's environmental awareness training on paleontological resources. The training will provide a description of the fossil resources that may be encountered in the Project area, outline steps to follow in the event that a fossil discovery is made, and contact information for the Project Paleontologist and on-site monitor(s). The training will be developed by the Project Paleontologist and may be conducted concurrent with other environmental training (e.g., cultural and natural resources awareness training, safety training, etc.).
Location	Designated training facility
Monitoring/Reporting Action	Document completion of training for each field personnel.
Effectiveness Criteria	All field personnel receive adequate worker's environmental awareness training on paleontological resources.
Responsible Agency	Western
Timing	Prior to construction, Construction, and O&M
Mitigation Measure	MM PALEO-4: Conduct Paleontological Mitigation Monitoring. Prior to the commencement of ground-disturbing activities, a qualified and professional paleontologist will be retained to prepare and implement a Paleontological Resource Mitigation Plan for the Project. Initially, full-time monitoring will be required during ground-disturbing activities in the areas of the Project with a recommended paleontological resource potential of Class 4 or higher (i.e., Panoche Formation, Moreno Formation, Oro Loma Formation, Briones Formation, Neroly Formation, Tulare Formation, and Quaternary older alluvium). Part-time monitoring or spot checking will occur in areas of the Project underlain by geologic units with a recommended paleontological resource potential of Class 3. In addition, spot checking will also occur in Project areas underlain by Quaternary alluvial deposits in order to determine if underlying sensitive geologic units are being impacted by construction, and at what depth. Monitoring will entail the visual inspection of excavated or graded areas and trench sidewalls. In the event that a paleontological resource is discovered, the monitor will have the authority to temporarily divert the construction equipment around the find until it is assessed for scientific significance and collected. Monitoring will include matrix screening for the presence of microfossils and the frequency of which will be determined by the Project Paleontologist. Monitoring is largely a visual inspection of sediments; therefore, the most likely fossils to be observed will be macrofossils of vertebrates (bones, teeth, tusk) or invertebrates (shells). At the discretion of the Project Paleontologist, the monitor will periodically screen sediments to check for the presence of microfossils that can be seen with the aid of a hand lens (i.e., microvertebrates). Should microvertebrate fossils be encountered during the screening process, then bulk matrix samples will be taken for processing off site. For each fossiliferous horizon or paleosol, a standard sample (4.0 cubic yards or 6,000 pounds) will be collected for subsequent wet-screening per SVP (2010) guidelines.
Location	Entire Project area

Table 6-1. Mitigation Monitoring and Reporting Program

Monitoring/Reporting Action	Document preparation and implementation of Paleontological Resource Mitigation Plan. Document and report results of monitoring.
Effectiveness Criteria	Impacts to scientifically important paleontological resources are avoided during ground-disturbing activities.
Responsible Agency	Western
Timing	Prior to construction, Construction, and O&M
Mitigation Measure	<p>MM PALEO-5: Procedures for Fossil Preparation, Curation, and Reporting. Upon completion of fieldwork, all significant fossils collected will be prepared for curation. Preparation will be done in a properly equipped paleontology laboratory and will include the removal of excess matrix from fossil materials, and stabilizing and repairing specimens, as necessary. Following laboratory work, all fossil specimens will be identified to the lowest taxonomic level, cataloged, analyzed, and curated. The fossil specimens must be delivered to the accredited museum repository identified on the permit and receipt(s) of collections will be submitted to Western. This delivery will be made as soon as practical but no later than 60 days after all fieldwork is completed. The cost of curation is assessed by the repository and will be the responsibility of Western.</p> <p>At the conclusion of laboratory work and museum curation, a Paleontological Mitigation Report will be prepared describing the results of the paleontological mitigation monitoring efforts associated with the Project. The report will include a summary of the field and laboratory methods, an overview of the Project area geology and paleontology, a specimen inventory of all taxa recovered (if any), an analysis of fossils recovered (if any) and their scientific significance, the signed receipt of confirmation of museum deposition, and recommendations. The report will be submitted to the designated repository, Western, and any other interested state or federal agencies involved within 45 days following completion of monitoring and laboratory work.</p>
Location	Entire Project area
Monitoring/Reporting Action	Obtain permit and deliver all significant fossils collected to the accredited museum repository identified on the permit. Submit Paleontological Mitigation Report to the designated repository and any other interested state or federal agencies involved within 45 days following completion of monitoring and laboratory work.
Effectiveness Criteria	Proper treatment of significant fossils is maintained upon completion of all fieldwork.
Responsible Agency	Western
Timing	Prior to construction, Construction, and O&M
Mitigation Measure	<p>MM REC-1: Coordinate with local agencies to identify tower locations. Western shall coordinate with the CDPR regarding transmission line structure locations within the SLRSRA boundary to minimize conflicts with planned recreation areas and facility management.</p>
Location	Entire Project area
Monitoring/Reporting Action	Provide project design specifications to affected local agencies and incorporate recommendations from affected agencies to the extent possible.
Effectiveness Criteria	Conflicts with proposed recreation or facility management are avoided or minimized.
Responsible Agency	Western
Timing	Prior to construction

Table 6-1. Mitigation Monitoring and Reporting Program

Mitigation Measure	MM REC-2: Modify existing facilities within and relocate, if necessary, the entrance to the Jasper Sears OHV Use Area. Western shall coordinate with Reclamation and CDPR to identify modifications to existing facilities within the Jasper Sears OHV Use Area necessary to facilitate continued operation of the Jasper Sears OHV Use Area. In the case that the new Los Banos West Substation renders the existing entrance to the OHV use area unusable, Western shall coordinate with Reclamation and CDPR to relocate the entrance to provide continued access to the OHV use area. Modifications to the Jasper Sears OHV Use Area, including a new entrance as necessary, shall be operational before construction begins within the OHV use area.
Location	Jasper Sears OHV Use Area
Monitoring/Reporting Action	Provide project design specifications to affected local agencies and incorporate necessary modifications to existing facilities to the extent possible.
Effectiveness Criteria	Jasper Sears OHV Use Area continues to operate
Responsible Agency	Western
Timing	Prior to construction
Mitigation Measure	MM TRAFFIC-1: Prepare and Submit Traffic Control Plans. Prior to the start of construction, Western would submit traffic control plans to all agencies with jurisdiction of public roads that would be affected by construction activities. The plans will include details on work schedule, associated truck traffic and commuter traffic for all portions of the project. Plan requirements include: <ul style="list-style-type: none"> ▪ Coordinating with the affected jurisdictions on construction hours of operation. ▪ Following guidelines of the local jurisdiction for road closures caused by construction activities. ▪ Installing traffic control devices as specified in the California Department of Transportation's (Caltrans') Manual of Traffic Controls for Construction and Maintenance Works Zones (California Department of Transportation, 1996). ▪ Notifying the public of road closures in the immediate vicinity of the construction zone and/or of temporary closures of bike lanes, and recreation trails. ▪ Providing access to driveways and private roads outside the immediate construction zone. ▪ Monitoring road and bike lane damage and repairing roads and bike lanes damaged during construction, or providing compensation for damage to roadways and bikeways. ▪ Coordinating with Caltrans and the California Highway Patrol for stringing transmission line conductors and fiber over interstate or state highways, an activity that would require close coordination with these agencies to minimize hazards to workers and the public.
Location	Entire Project area
Monitoring/Reporting Action	Submit traffic control plans to all agencies with jurisdiction of public roads that would be affected by construction activities.
Effectiveness Criteria	Traffic-related impacts are avoided or minimized through implementation of Traffic Control Plans.
Responsible Agency	Western
Timing	Prior to construction

Chapter 7 Preparers and Reviewers

A consultant team headed by Aspen Environmental Group prepared this document under the direction of Western and the Authority. Table 7-1 presents the agency preparers and technical reviewers of this document and their qualifications. Table 7-2 presents the preparers for the Aspen consultant team.

Table 7-1. Agency Preparers and Reviewers

Agency/Office	Name and Title	Education	Years Exp.	Specialty/Expertise
Western				
Western Sierra Nevada Region	Don Lash, NEPA Document Manager	M.S., Soil, Water, and Environmental Science	15	NEPA Document Manager
	Russell Knight, Power Operations Advisor	B.S., Civil Engineering	32	Power Operations Management
	Joe Oloriz, Project Manager	B.S., Architecture, PMP	20	Project Management
	Gerald Robbins, Natural Resources Manager	M.S., Geology	28	Natural Resources Management
	Heidi Miller, Lands and Rights of Way Manager	B.S., Business	23	Lands Rights of Way
	Latisha Saare, Biologist	M.S., Biology	12	Biology
	Cherie Johnston-Waldear, Regional Preservation Official/Tribal Liaison	M.A., Classical Archeology	25	Cultural Resources
	Kristen Dalldorf, Environmental Protection Specialist	M.S., Natural Resources and Environmental Science	8	Environmental Compliance
Western Corporate Services Office	Matthew Blevins, Environmental Manager	M.S., Environmental Engineering B.S., Chemistry	15	NEPA
	Steve Blazek, NEPA Specialist	M.S., Environmental Policy and Management B.S., Natural Resources Management	28	NEPA
San Luis & Delta-Mendota Water Authority				
	Frances Mizuno, Assistant Executive Director	B.S., Civil Engineering	25	Project Management
Engineering and Planning Department	Bob Martin, Department Manager	B.S., Civil Engineering	26	Design, Operations, and Maintenance
U.S. Bureau of Reclamation				
Division of Power Operations	Barry Mortimeyer, Chief, Power Operations Division	B.S., Electrical Engineering	40	Power Operations
Division of Environmental Affairs	Russell Grimes, Chief, Environmental Compliance and Conservation	M.S., Environmental Management B.A., Environmental Studies	23	NEPA

Table 7-2. EIS/EIR Preparers

Firm	Personnel by Name and Title	Education	Years Exp.	Specialty/Expertise
Aspen Environmental Group				
	Tom Murphy, Vice President	M.A., Physical Geography B.A., Earth Science	21	EIS/EIR Project Manager
	Heather Blair, Senior Associate	M.S., Conservation Biology B.S., Ecology	11	EIS/EIR Deputy Project Manager
	Matthew Long, Environmental Scientist	Master of Environmental Science Master of Public Policy	7	Geology, Minerals, and Soils; Water Resources and Floodplains
	Jennifer Lancaster, Biologist	M.S., Biology B.S., Biology	13	Biological Resources
	Moselle DiPane, Environmental Scientist	B.A., Geography	2.5	Agriculture; Recreation; Environmental Justice; Socioeconomics
	Evan Elliott, Cultural Resources Specialist	M.A., Cultural Resources Management, B.A., Anthropology (Archaeology)	10	Cultural Resources
	Mathew Trask, Senior Associate	B.A., Science and Investigative Journalism	18	Air Quality, Noise, Visual Resources, Land Use, Public Health and Safety, Traffic and Transportation, Paleontological Resources
	Beth Bagwell, Cultural Resources Group Manager	Ph.D., Anthropology (Archaeology), M.A., Anthropology (Archaeology), B.A., Anthropology and Creative Writing	20	Cultural Resources
	Brewster Birdsall, Senior Associate	M.S., Civil Engineering B.S., Mechanical Engineering	22	Air Quality, Noise
EcoBridges Environmental Consulting				
	Anne Wallace, Senior Biologist	M.S., Wildlife Science B.S., Wildlife Biology	30	Biological Resources
Pacific Legacy				
	John Holson	M.A., Anthropology (Archaeology), B.A., Anthropology (Archaeology)	38	Cultural Resources
	Robert Jackson	M.A., Anthropology (Archaeology), B.A., Anthropology (Archaeology)	38	Cultural Resources
	Lisa Holm	Ph.D., Anthropology (Archaeology) MSC, Computer Sciences (Archaeology) B.A., Anthropology (Archaeology)	18	Cultural Resources
	Elena Reese	M.A., Archaeology B.A., Ancient History	25	Cultural Resources
	Hannah Ballard	M.A., Cultural Resources Management, B.A., Anthropology (Archaeology)	18	Cultural Resources
	Rhea Sanchez	M.A., Anthropology (Archaeology), B.A., Anthropology (Archaeology)	11	Cultural Resources
	Shanna Streick	M.A., Creative Writing B.A., English	6	Cultural Resources
	Amy Kovak	M.A., Anthropology (Archaeology), B.A., Anthropology (Archaeology)	12	Cultural Resources
	Starla Lane	M.A., Historical Archaeology, B.A., Anthropology (Archaeology)	8	Cultural Resources

Chapter 8

Recipients of the Draft EIS/EIR

The following sections provide a list of agencies, organizations, and individuals to whom notification of availability of the Draft EIS/EIR were sent.

8.1 Agencies and Organizations

Akopianz Aphrodite Trust	Central Valley Regional Water Quality Control Board
AKT Developments LLC	Chacopulos G Survivors Trust
Alameda County	Chevron Corporation
Allen Matkins LLP	Christy Concrete Productions Inc.
Anatolia LLC	City of Gustine
Arnaudo Brothers LP	City of Los Banos
B and V Incorporated	City of Newman
Banta-Carbona Irrigation District	City of Patterson
Bay Area Air Quality Management District	City of Tracy
Beltran Farms	CK Investment Company LLC
Bidart Bros Corporation	Clarot Farms Inc
Bureau of Reclamation, Mid-Pacific Region	CM Trinkle LLC
Business Development International	Connolly Ranch
Butler Amusements Inc.	Contra Costa County
Byron Bethany Irrigation District	Contra Costa Water District
Byron Highway Energy Center LLC	County of Alameda
CAK LP	County of Merced
California Cattlemen's Association	County of Stanislaus
California Department of Fish and Wildlife	David E Wood Living Trust
California Department of Parks and Recreation	Defenders of Wildlife
California Department of Water Resources	Del Puerto Water District
California Farm Bureau Federation	Delta-Mendota Canal
California Highway Patrol	Dompe Lands Inc
California Native Plant Society	Drainage Management South-Central California Area
California State Horseman's Association	Duke Energy
California Striped Bass Association	E and C Farms LLC
Caltrans District 10	Elfers Hills LLC
Caltrans District 4	Elworthy and Son
Central California Irrigation District	Environmental Defense Fund

Environmental Protection Agency	Park and Sell LLC
Filbin Land and Cattle Company	Parkway South Incorporated
First Industrial Realty	Patterson Irrigation District
Fred Beltran Jr and Sons Partnership	PCCP Mountain House LLC
Frontier Renewables LLC	Planning and Conservation League
Gibson Vail LLC	Pombo Ranch Estates LLC
Gnesa Living Trust	Ray and Dorothy Mallonee 2005 Trust
Granite Construction Company	Rec Fishing Alliance
Griffith Family Properties LLC	Recreational Fishing Alliance
Grissom Land and Cattle	Red Bear Property Management
GTB Consulting	Rishwain and Rishwain
Hetch Hetchy Water and Power	Riverview Capital Advisors
HMV Farms LLC	Robert Houret Construction Corporation
I-5 City LLC	San Benito County
Iacopi Lenz and Company	San Francisco Regional Water Quality Control Board
Jackson Land and Cattle	San Joaquin Council of Governments
Jackson Land Holdings LP	San Joaquin County
Jo E Mitchell Trust	San Joaquin County Department of Public Works
Joe Borba and Sons	San Joaquin Delta Community College
John and Bill Jensen Farms	San Joaquin Valley Air Pollution Control District
Kemp Family Trust	San Luis & Delta-Mendota Water Authority
Khaira Investments	San Luis National Wildlife Refuge
L Davis 2009 Trust	San Luis Sailboard Safety Patrol
Los Banos Chamber of Commerce	San Luis Water District
Los Banos Chamber of Commerce	San Pablo Bay Pipeline Company LLC
Los Banos Sequoia LLC	Santa Clara County
Mangini 1998 Trust	Santa Nella Chamber of Commerce
Merced County	Santa Nella County Habitat Conservation LLC
Merced County Farm Bureau	Santa Nella County Water District
Modesto Irrigation District	Schropp-Alameda LP
Modesto Radio Control Club	Shea Mountain House LLC
Mountain House School	Sherwood Family Trust
Nasa Ames Research Center	Sierra Club
Native American Heritage Commission	Stanislaus County
Natural Resources Defense Council	State Historic Preservation Office
Nature Conservancy	
Obanion Ranches	
Pacific Gas and Electric Company	

State of California Aqueduct
Studley Company
Sun Power Corp
Sunset Hills Development LLC
Teixeira and Sons
The Desilva Group LLC
The Freda Hansen Family Trust
Thomas Law Group
Tracy Chamber of Commerce
Tracy Hills Project Owner LLC
Transmission Agency of Northern California
Travel Centers of America LLC
Union Pacific Railroad Company
United Anglers of California

United States Bureau of Land Management
United States Bureau of Reclamation
United States Department of Veterans
Affairs
United States Fish and Wildlife Service
United States Veteran Administration
Valley Crop Dusters
Vieira Family LP
Vieira Family LTD PTP
West Side Irrigation District
West Stanislaus Irrigation District
Wildlands Inc.
Wright Solar Park LLC

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Barbara Boxer
United States Senate
Washington DC 20510

Anthony Cannella
California State Senate
Sacramento CA 95814

Anthony Cannella
California State Senate
Merced CA 95340

Ellen Corbett
California State Senate
Sacramento CA 95814

Jim Costa
United States Congress
Fresno CA 93721

Jim Costa
United States Congress
Merced CA 95340

Jeff Denham
United States Congress
Washington DC 20515

Jeff Denham
United States Congress
Modesto CA 95356

Mark DeSaulnier
California State Senate
Sacramento CA 95814

Mark DeSaulnier
California State Senate
Walnut Creek CA 94597

Susan Talamantes Eggman
California State Assembly
Stockton CA 95202

Diane Feinstein
United States Senate
Fresno CA 93721

Diane Feinstein
United States Senate
Washington DC 20510

Cathleen Galgiani
California State Senate
Modesto CA 95354

Cathleen Galgiani
California State Senate
Stockton CA 95202

Adam Gray
California State Assembly
Merced CA 95340

Adam Gray
California State Assembly
Sacramento CA 94249

Hannah-Beth Jackson
California State Senate
Sacramento CA 95814

Zoe Lofgren
United States Congress
San Jose CA 95112

Bill Monning
California State Senate
Sacramento CA 95814

Jerry McNerney
United States Congress
Stockton CA 95207

Jerry McNerney
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Washington DC 20515

Kristin Olsen
California State Assembly
Modesto CA 95356

Eric Swalwel
United States Congress
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Table 3.4-3. Conservation Easements

Segment	Within Project Area (Corridors)	Within Study Area (Outside Project Corridors)
North Segment		
Proposed Project	• None	• Haera
Central Segment		
Proposed Project	• Simon Newman Ranch • Tracy 580 Business Park Preserve	• Simon Newman Ranch • Tracy 580 Business Park Preserve
Patterson Pass Road Alternative	• Simon Newman Ranch • Tracy 580 Business Park Preserve	• Simon Newman Ranch • Tracy 580 Business Park Preserve
San Luis Segment (500 kV)		
Proposed Project	• Romero Ranch • San Joaquin kit fox easement	• Romero Ranch • San Joaquin kit fox easement • Aqua Fria Phase I
Butts Road Alternative	• Romero Ranch	• Romero Ranch • Aqua Fria Phase I
West of Cemetery Alternative	• Romero Ranch	• Romero Ranch • Aqua Fria Phase I
San Luis Segment (70 kV)		
Proposed Project	• None	• Aqua Fria Phase I
West of O'Neill Forebay 70-kV Alternative	• Romero Ranch • San Joaquin kit fox easement	• Romero Ranch • San Joaquin kit fox easement
South Segment		
Proposed Project	• None	• Aqua Fria Phase I
San Luis to Dos Amigos Alternative	• None	• Aqua Fria Phase I
Billy Wright Road Alternative	• None	• Aqua Fria Phase I

3.4.1.2 Regulations, Plans, and Standards

Biological resources regulations, plans, and standards include the following. See Appendix C for details.

- **Federal Endangered Species Act (FESA), 16 U.S.C. §§ 1531, *et seq.*** Protects plants and wildlife that are listed as endangered or threatened by the USFWS and NMFS. Section 9 of FESA prohibits the “take” of endangered wildlife, which is defined as “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in such conduct” 16 U.S.C. § 1532(19). For plants, this statute governs removing, possessing, maliciously damaging, or destroying any listed plant on federal land and removing, cutting, digging up, damaging, or destroying any listed plant on non-federal land in knowing violation of state law (16 USC § 1538). Under section 7 of FESA, federal agencies are required to consult with the USFWS if their actions, including permit approvals or funding, could adversely affect a listed species (including plants) or its critical habitat. Through consultation and preparation of a biological opinion, the USFWS may issue an incidental take statement allowing take of the species that is incidental to another authorized activity, provided the action will not jeopardize the continued existence of the species. Section 10 of FESA provides for issuance of incidental take permits to private parties provided a habitat conservation plan is developed.
- **Migratory Bird Treaty Act (MBTA), 16 U.S.C. §§ 703-712.** Under the MBTA it is unlawful to pursue, hunt, take, capture, kill, possess, sell, purchase, barter, import, export, or transport any migratory bird,

California Environmental Quality Act: ES-1, ES-5, ES-9, 1-1, 1-4-1-5, 2-4, 2-17, 2-26, 2-34, 3-41, 3-56-3-58, 3-91, 4-1, 4-101, 4-103, 4-104, 4-106-4-107, 4-109-4-113, 4-115, 4-117, 4-120-4-123, 4-124, 4-129-4-130, 4-133-4-135, 4-12-4-18, 4-137-4-138, 4-22, 4-24, 4-46, 4-52, 4-55-4-57, 4-4-4-6, 4-9, 4-58, 4-60-4-63, 4-67, 4-70-4-73, 4-75-4-77, 4-83-4-84, 4-86, 4-88, 4-90-4-91, 4-93-4-94, 4-95, 4-97-4-100, 6-1, 6-26

California Independent System Operator: ES-2, ES-7, 1-2-1-3, 2-25, 2-34, 4-103

California Native Plant Society: 3-17, 3-21, 4-26, 6-4

California Natural Diversity Database: 3-17, 3-22-3-26, 3-30, 4-22

California Outdoor Recreation Plan: 3-101

California Rare Plant Rank: 3-21, 3-26, 4-22-4-23, 4-25-4-26, 6-2, 6-4

Carbon monoxide: 3-11-3-13, 3-15, 4-12

CAS: See Corrective Action Study

CDFW: See California Department of Fish and Wildlife

CDPR: See California Department of Parks and Recreation

Central Segment: ES-5-ES-6, 2-18, 2-20, 2-29, 2-34, 3-101, 3-107, 3-22-3-23, 3-37, 3-54, 3-76, 3-84, 3-88, 4-109, 4-113, 4-120, 4-122, 4-125-4-126, 4-13, 4-17, 4-2, 4-23, 4-47, 4-52, 4-54-4-55, 4-59, 4-64, 4-6-4-8, 4-72, 4-76, 4-83, 4-88, 4-98-4-99

Central Valley Project: ES-2, 1-1, 1-3-1-5, 3-51, 3-78, 4-125

Central Valley Regional Water Quality Control Board: 3-122-3-123

CEQ: See Council on Environmental Quality

CEQA: See California Environmental Quality Act

CESA: See California Endangered Species Act

Clean Air Act: 3-11, 3-14-3-15

Clean Water Act: 3-123, 3-131, 3-34, 3-38-3-39, 4-119

CNDDb: See California Natural Diversity Database

CNEL: See Community Noise Equivalent Level

CNPS: See California Native Plant Society

Community Noise Equivalent Level: 3-83, 3-87-3-88

CORP: See California Outdoor Recreation Plan

Corrective Action Study: 4-125

Council on Environmental Quality: 3-61, 4-124, 4-17

CRPR: See California Rare Plant Rank

Cultural resources: 2-16, 2-29-2-30, 2-32-2-33, 3-41-3-42, 3-52-3-60, 4-129, 4-136, 4-58-4-62, 4-64-4-66

Cumulative impacts: 4-124, 4-127-4-135, 4-17

CVP: See Central Valley Project

CVRWQCB: See Central Valley Regional Water Quality Control Board

CWA: See Clean Water Act

— D —

Department of Energy: ES-1, 1-1, 1-4, 3-55, 3-61, 4-89

Department of Toxic Substances Control: 3-95-3-96

Department of Transportation: 3-95, 4-104-4-105, 4-78-4-79, 4-89, 6-31

Diesel particulate matter: 3-15, 4-15

Disturbances: ES-6, 2-5, 2-9-2-10, 2-13-2-17, 2-24-2-25, 2-29-2-31, 2-33-2-34, 3-91, 4-119-4-120, 4-122-4-123, 4-128-4-129, 4-131, 4-134, 4-136, 4-19, 4-21, 4-23-4-25, 4-27-4-28, 4-30-4-31, 4-33-4-43, 4-45-4-47, 4-49-4-50, 4-55-4-56, 4-3, 4-4, 4-6-4-9, 4-58, 4-60-4-63, 4-66, 4-69-4-72, 4-85-4-86, 6-2, 6-4, 6-6, 6-8, 6-11-6-12, 6-14-6-23, 6-26

DOC: See California Department of Conservation

DOE: See Department of Energy

DOT: See Department of Transportation

DPM: See Diesel particulate matter

DTSC: See Department of Toxic Substances Control

— E —

East County Area Plan: 3-58, 3-88, 3-9, 4-4

East County Specific Plan: 3-120, 3-79

ECAP: See East County Area Plan

ECSP: See East County Specific Plan

EDD: See Employment Development
Department

EIR: See Environmental Impact Report

EIS: See Environmental Impact Statement

Electromagnetic fields: ES-4, 3-92, 3-94–3-96,
4-102, 4-3, 4-93

EMF: See Electromagnetic fields

Employment Development Department: 3-104

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